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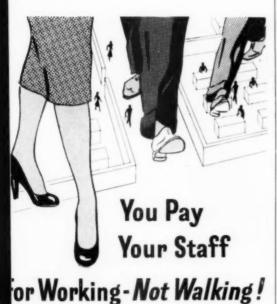
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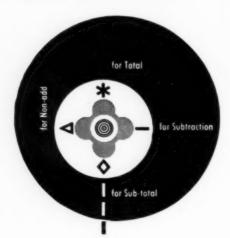
Contents for April

BUSINESS NEWS AND DEVELOPMENTS PROSPECT economic supplement facing page Month's Highlights and Trends ... Salient Figures of the Month . . -111 Home Market Regional Surveys vi-vii State of the Nation: 23 Key Charts ... Export Market Survey . . xi The March of Business People, Products and Places... Management at Work Men of Vision..... POLICY AND MANAGEMENT Six Qualities of Leadership Qualities of Leadership . . Raymond A reasoned analysis of the key qualities demanded of today's industrial executive Raymond Parmenter German Export Competition . . H. Catleen, D.Sc., M.I.Ex. An on-the-spot survey gives a new view of German competition in consumer goods How to Finance Your Business-1 First of a new Business series of especial interest to the leader of the smaller firm This Machine Promises a New Era ... Frank G. Casev Commercial application of the electronic "brain" and its revolutionary implications Co-ordination by Conveyer Picture Story Checking Departmental Management A. G. Cruft, F.C.I.S. How the executive of the smaller firm can keep a check on all departmental activities World-wide Service with Sales A. G. Thomson INDUSTRIAL MANAGEMENT AND LOUIPMENT Production Control in a Small Firm R. G. Ward, F.C.W.A. How job cards can be used for co-ordinating production, planning and cost accounting Flow-Production Doubles Output, Cuts Costs W. Altman Industrial Equipment ... ADMINISTRATION AND OFFICE PRACTICE How Duplicating Aids Direct Mail Alan Peters 77 The Hanging Offices of Basingstoke . . G. R. Lampton A novel form of construction combines fuller use of overhead space with visual supervision Short Cuts to Office Efficiency For Your Office: Equipment Survey REALTH-WELFARE - SAFETY - CANTEEN "3-D Defence" Reduces Fire Hazards Peter Spooner How an industrial fire service is successfully integrated with general factory routine Canteen Supervisors' Salaries... Winifred McCullough Welfare Equipment ... Canteen Equipment ... Classified Guide to Advertised Equipment 126

Change of subscriber's address: Please notify Publishers six weeks before change of address is to take effect, giving present address in full and new address. BUSINESS, Vol. 84, No. 4 (incorporating "The Magazine of Commerce," "Modern Business, "System," "Business Organization and Management," "Business News Digest" and "British Industrial Equipment"). Published monthly by Business Publications Ltd., 180 Fleet Street, London, E.C.4. CHAncery 8844. 30/- a year post free U.K.; 35/- Overseas.

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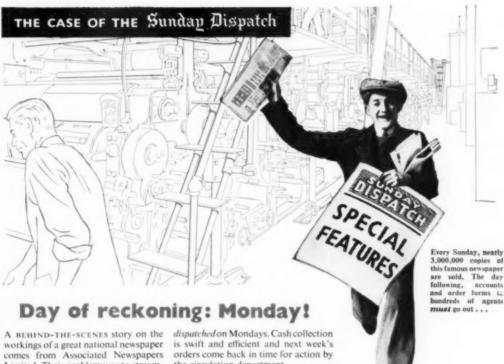
The lighting of many processes is vital to the smooth and rapid flow of work and to the quality of the finished product. For example, poor lighting could make a spray tunnel into a bottle-neck — each job taking a little too long, a little portion missed, a return to the spray line — and so the whole production line marks time. Whatever form it takes, good lighting not only helps to provide a satisfactory working environment but is an active production tool.

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210 postings in 45 minutes -that's normal rate of work achieved by Mrs. normal rate of work achieved by Mrs. J. Dickens, seen preparing statements for newsagents in the offices of Associated Newspapers Ltd. Watching her use one of the Burroughs Sensimatic Accounting Machines is Mr. Paul Stark, the Burroughs man who helped solve "The Case of the Sunday Dispatch." using Burroughs Sensimatics on sales accounts for their latest paper, the "Daily Sketch."

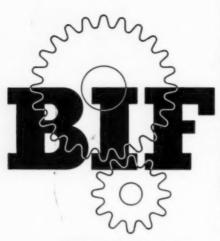
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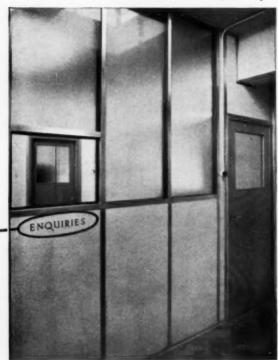
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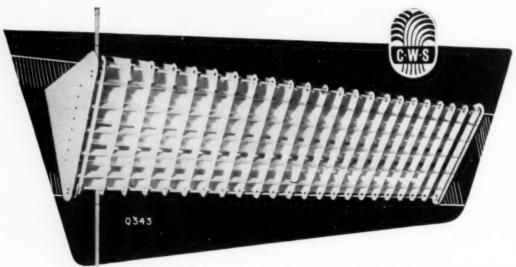
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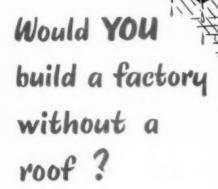
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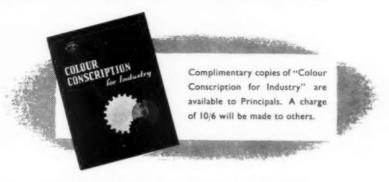


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APRIL, 1954

25



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ask the typist

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APRIL, 1954



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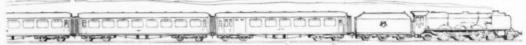
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PROSPECT

survey and forecast of business conditions

The United States Recession

London, March 19, 1954

• As we go to press the world trend of business activity waits on the word of one man, President Eisenhower. It is pertinent therefore, to indicate what is likely to happen if he gives the word to his administration to take anti-depression measures, and what may happen if he does not.

THE MONTH'S HIGHLIGHTS AND TRENDS

- Regardless of any action he takes, or does not take, to support the American economy, the total level of British home trade may hold up fairly well, but the course of events in the United States is likely to have a big effect on the steps taken in Britain by Mr. Butler in order to maintain home trade and keep the export position in balance.
- In February the index of industrial production compiled by the United States Federal Reserve Board declined two points on the January level, to 10.2 per cent below the post-war peak reached last July. As this index is seasonally adjusted, the decline from January to February cannot be explained by normal seasonal factors.
- President Eisenhower has insisted that there is as yet no depression in the United States, and that he will take action to prevent one. But in the words of the Financial Times, "the optimism of the President can only be a cause for anxiety. An administration is more likely to act effectively against a depression if it is willing to admit that one exists."
- A decline in business activity has a cumulative effect, for the orders of one business represent the sales of another. If one firm receives less orders, it cuts its own orders more than in proportion, so that it can reduce stocks at the same time. Therefore any action taken to avert depression at this late stage is likely to have less effect than if taken three months ago.
- As President Eisenhower has thrown the whole weight of his personal prestige into the scales against a depression, and a change in his views at this stage would in itself have repercussions, it is the safer course for British businessmen and for Mr. Butler, the Chancellor of the Exchequer, to assume that the American recession will continue for some months, regardless of any action that is taken.
- What effect will this assumption have on Mr. Butler's Budget? This may be gauged by considering the sort of Budget Mr. Butler might have produced, had there been no American recession. The climate of opinion during the last year has been very much in favour of stimulating industrial investment, which had to be cut when Mr. Butler first became Chancellor.
- Two instruments are ready to hand for Mr. Butler, if he wants to stimulate investment. First is the Millard Tucker Committee report on the Taxation Treatment of Provisions for Retirement. At a cost of some £70 million of revenue in a full year the Chancellor could, by adopting the recommendations of this report, stimulate no less than a few hundred millions pounds of additional saving per year—savings which would be partly available for industrial investment. As a second weapon, the Chancellor may have already received an interim report from the Royal Commission on Taxation, recommending new methods of treatment of profits for tax purposes, with a view to stimulating investment.
- Is the Chancellor likely to adopt either of these reports in the Budget? He will be taking a risk if he does, in the face of events across the Atlantic. For the American

continued on following page

THE MONTH'S HIGHLIGHTS AND TRENDS (continued)

recession may yet cause a deterioration in the British balance of payments. And as Mr. Butler found early in 1952, the easier way to improve the balance of payments position is to cut investment, not consumption.

- This is easier for two reasons. It is the least unpopular measure with the electorate and it is the quicker. By a rise in Bank Rate he can cause business firms to cut their stocks of materials. By suspending building licences and by tightening instructions to the banks regarding overdraft facilities, he can curtail investment in buildings plant and machinery.
- ◆ There are five factors which may encourage Mr. Butler to take risks: (a) In spite of the American recession, British Overseas trade has remained in balance, (b) The National Savings position is £50 million better than a year ago, (c) The revenue-expenditure position is £100 million better than last Budget estimate, (d) The new freedom for transferable sterling reflects Overseas confidence in Britain, (e) President Fisenhower is apparently willing to back Britain in making sterling convertible.
- There are at least four factors in the British economy which will help to maintain the overall total of expenditure: (a) defence expenditure, (b) Government welfare expenditure, which would rise rather than fall if there were an increase in unemployment, (c) guaranteed farm prices, which ensure that the farmers as a group do not suffer a major fall in income, and (d) the large house building programme to which the Government is politically committed.
- Retail sales in January were exceptionally good. Large retailers' total sales were 12 per cent higher than a year earlier and the smaller, independent retailers showed a rise in sales of five per cent above January, 1953. Multiple retail stores are continuing to increase their share of clothing and footwear sales at the expense of department stores, co-operative societies and independents.
- Brick output in January was 596 million bricks, or 25 million above the level a year earlier, and the highest January level since the war. This, of course, reflects the housing boom. However, the lighter consumption goods industries are also, by and large, booming, as is obvious from the fact that the interim index of industrial production for January was 126-7, or 10 points above the level a year earlier.
- Rayon production was 37.2 million lbs. in January, or 2.3 million lbs. more than in December and nearly nine per cent more than output a year earlier. The carpet industry is also booming, and helped by the housing programme, should continue to prosper. This is true of most other industries related to housing.
- One home industry with a low January output was brewing. Only 1,383,417 bulk barrels of beer were produced, which was 155,029 less than a year earlier and the lowest January total since 1934. However, December output had been exceptionally high, and when the two months are aggregated they show a rise in production of 60,779 barrels over the level a year earlier.
- February overseas trade results were moderately satisfactory. Because of the shorter working month, the overall figures are down on the January level, but the daily rate of exports was maintained and the daily rate of imports was slightly lower.
- In January overseas shipments of motor cycles were valued at £714,587, the highest level for several months. But cycle shipments were down from £1.75 million in December to £1.23 million in January, the lowest level for several months. Motor cycle manufacturers expect to have a good export year, and even cycle manufacturers are not pessimistic, in spite of the slow start. Last year exports of bicycles to Canada and the United States were a record, but intense competition is developing from Holland, Belgium and France in popular-priced machines.
- The February index of prices of basic materials used in British industry, compiled by the Board of Trade, declined 0.4 per cent to 140.3. Basic material prices have been reasonably steady now since the middle of 1952, with a slight overall tendency towards decline. They are unlikely to rise in price, and may even sag further, unless the United States depression is cured quickly.

SALIENT FIGURES OF THE MONTH

Production index for the Christmas month of December (8) was 120, or 12 points below the level in November, but eight points above the level a year earlier. Provisional figure for January is 126-7, compared with 118 a year earlier.

Total employment in manufacturing industry (3) in January was 8,955,000, or 22,000 above the level a month earlier. Seasonal factors caused total registered unemployment (7) to rise by 79,700 in February to 452,500

Retail price index in January (32) was 140, the same as in the previous month and two points above the level a year earlier.

Weekly wage index (31) was 138, the same as the previous month but four points above the level a year earlier.

Retail sales index (25) was 118 in January, a seasonal drop of 44 points from the Christmas spending level of December, but a rise of six points on the level a year earlier.

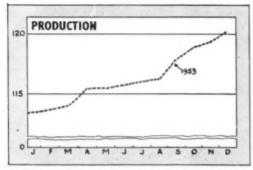
Value of exports in February (22) was £209.2 million, or £24.7 million below the level a month earlier. Imports (20) at £241.9 million, were £40.2 million below the level a month earlier.

Passenger car average weekly output in January (17) was 13,400, or 1,290 above the December average. Commercial vehicles were produced at the rate of 5,000 per week in January, an increase of 290 on the December average.

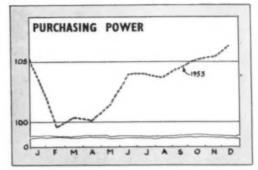
		Increase (+) or Decrease (-) on a	
BUSINESS' INDICES	Latest Month	Month Ago	on a Year Ago
1. Production (12-month moving average) 1948 = 100	* 120-5	+ 0.8	+ 6.4
2. Purchasing Power (do.)	* 107-6	+ 2.2	+ 2.0
MANPOWER			,
3. Total manufacturing industries thousands	8.955	+ 22	+256
4. Textiles (do.)	1,006	+ 4	+ 53
4. Textiles (do.) 5. Distributive trades (do.) 6. Coal (on colliery books) (do.)	2,687	- 1.7	+ 60
6. Coal (on colliery books) (do.)	707	- 2	- 15
7. Paristand and CON (do.)	† 452.5	+ 79.7	- 23-0
7. Registered unemployed (G.B.) (do.)	1 432.3	+ 11.1	_ 23.0
PRODUCTION	* 120	_ 12	+ 8
8. Index of prodn.: total, all inds. 1946 = 100	4.595	+344	— 35
9. Coal (average weekly output) (thousand tons)	4,373	+344	- 33
10. Gas available at gasworks (average weekly	15.1	0.1	1.7
output) (million therms)	65.6	+ 8-1	+ 1.7
11. Electricity generated (million kWh)	7,122	+589	+513
12. Steel ingots and castings (average weekly			
output) (thousand tons) 13. Cotton yarn (million lb.)	357	— 3	+ 5
13. Cotton yarn (million lb.)	16-48	+0.28	+ 2-42
 Rayon yarn and staple fibre (do.) 	37 - 24	+ 2.38	
15. Worsted yarn (do.)	* 18-85	- 1-15	+ 1.12
16. Sulphuric Acid (thousand tons)	** 171.2	8.1	+ 30.9
17. Passenger cars (average weekly, thousands)	13 - 40	+ 1.29	+ 3.19
18 Commercial vehicles (do.)		+ 0.29	- 0.12
19. Permanent houses completed (thousands)		+ 0.40	+ 12.86
TRADE			
20. Value of imports (£m)	+ 241-9	- 40.2	- 1.1
21. Value of imports, Dollar Area (£m)	51.5	- 3.9	+ 6.0
22. Value of exports (£m)	+ 209-2	- 24.7	+ 15-3
23. Value of exports, Dollar Area (£m)	33.5	+ 0.9	+ 2.6
24. Freight train traffic (thousand tons)		- 0.10	- 0.09
25. Retail sale index 1947 –100	118	- 44	+ 6
FINANCE	110		1
26. Currency in circulation (£m)	1,478	- 54	+ 78
27. Deposits, London clearing banks (do.)	6,457	-237	+198
	849	+ 76	+ 67
28. Provincial cheque clearings (£,000)		- 22	- 45
29. National savings, total outstanding (£m)		+ 15	+172
30. Gold and dollar reserves (do.)	† 923	+ 13	+1/2
WAGES AND PRICES	120	Come	1 4
31. Weekly wage rates 1947 = 100	138	Same	7.7
	†140	Same	+ 1
33. Price indices of materials used in:		0.5	10.3
Non-food mfg. industry 1949 = 100		- 0.5	- 10.2
Mechanical engineering (do.)	† 146-3	- 0.8	- 1.8
Electrical machinery (do.)	† 155-1	- 1.2	- 6.2
Building and civil engineering (do.)	† 129.7	— 0⋅3	- i·3
34. Import prices 1953 = 100 35. Export prices (do.)	98	Same	— 5
35. Export prices (do.)	99	Same	_ 2
**Nevember *December †February	*Four weeks to	January 24, 195	4

**November *December †February ‡Four weeks to January 24, 1954 All other figures refer to January

'BUSINESS' INDICES (1948 = 100)



A twelve-month moving average of the Official Index of Industrial Production (Total: All Industries).



An unweighted index of currency in circulation with the public, total bank deposits, and total outstanding national savings.



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was often motionless, never perpetual. Pension Schemes, too, refuse to run themselves, and the boy beneath the drapes is often an overworked company secretary.

Nor are Pension Schemes perpetual, unless they are regularly overhauled. Changes in legislation, in economic and social conditions, all call for periodic re-appraisal and modernisation.

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HOME MARKET Regional Surveys

North-Western

Lancashire remains short of labour—a reflection of near-boom conditions for most of its many industries. In textiles the big immediate worry stems more from lengthening delivery dates than from the very real threat of some cheaper lines being out-priced in overseas markets by competition from India and Japan—that is the medium-term worry. The present flush of prosperity for textiles is quite likely to be temporary.

The home trade, now very much more important than exports, will keep up its demand for a long time ahead. That is why go-ahead textile manufacturers seek bulk orders. The big buyers, such as C & A Modes and Marks & Spencer, who have to buy well ahead, are getting delivery to schedule because they are able to commit substantial proportions of the output of individual firms. Is there a lesson here for other industries? The growth-absolute and relative-of the multiples (including the co-ops) makes the enterprising businessman think hard. For some textile concerns, at any rate, the long runs and the careful planning which precedes them, make re-equipment, research and productivity promotion very much worth

Only north-east Lancashire remains heavily dependent on the traditional textile industries. Elsewhere engineering-heavy, medium and light-and chemicals have done much and will do more to put the undoubtedly growing prosperity on a sound basis. Nothing short of a world slump is likely to cause serious upsets now. The heavy engineers have good order books for over twelve months ahead. In fact, now that raw materials are easier, supply and demand for such items as castings (large and small) are generally neatly balanced at near full labour employment levels. Deliveries of heavy electrical plant, boilers and locomotives are uncomfortably long, to some extent because the supplies of rolled goods as well as heavy and medium plates tend to lag a little.

Possible Soviet orders are being energetically sought by makers of machine tools. electrical equipment, lorries and texule machinery. These could make up for orders now being completed by continental rivals who were able to penetrate traditional Commonwealth and other markets because in the last two or three years British capacity was insufficient to fill them quickly enough and because export credit lines had in some cases to be uncompetitively short, by Treasury edict

Chemicals are in steady demand the call for paint is strong, the plastics industry (a big buyer) is busy, and the season for fertilisers is starting. Orders for pharmaceuticals and tar products, too, are coming in well.

The north-west accounts for about two-thirds of Britain's rayon production, which since this time last year has been running at ever higher levels. Though it is realised by makers that Japan will eat into the overseas markets, 1954 at least is still expected to be a good year.

Cotton exports give cause for worry—they are falling off. Shipments of yarns and woven fabrics in January at £9,990,000 were £500,000 less than twelve months earlier. The story for other cotton goods is equally discouraging.

Southern

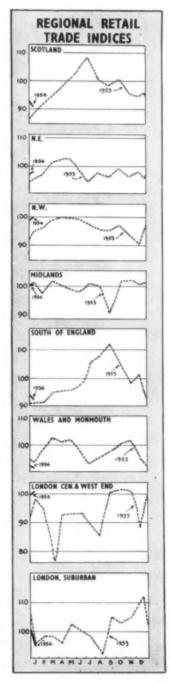
BORING for natural gas in the Ashdown forest is soon to begin. This is the nearest point to London where the Gas Board intends to explore possibilities. If gas is found—in economical abundance—London industrialists and housewives could look forware at least to a halt in gas prices.

Employment in the southern area, which has such a wide range of industries, is satisfactory; in fact aircraft firms have more vacancies than at this time last year. Only the furniture

Continued on page ix

What the Charts Show →

Indices in the charts show retail turnover in each region in non-food merchandise as a percentage of national average (=100) for the month. They are based on Board of Trade retail sales indices.

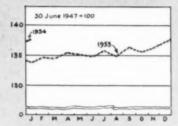


STATE OF THE NATION

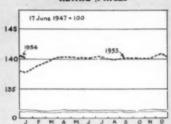
From this comprehensive series of charts, covering the main economic factors affecting the state of the nation, the businessman may gain a perspective of the situation governing his operations.

WAGES AND PRICES

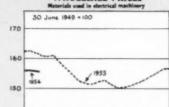
WEEKLY WAGE RATES



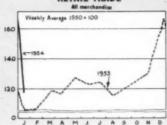
RETAIL PRICES



WHOLESALE PRICES

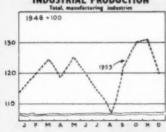


RETAIL TRADE

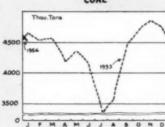


PRODUCTION

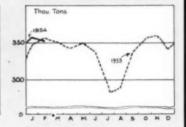
INDUSTRIAL PRODUCTION



COAL

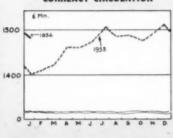


STEEL INGOTS & CASTINGS

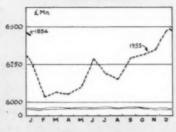


FINANCE

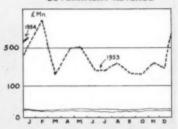
CURRENCY CIRCULATION

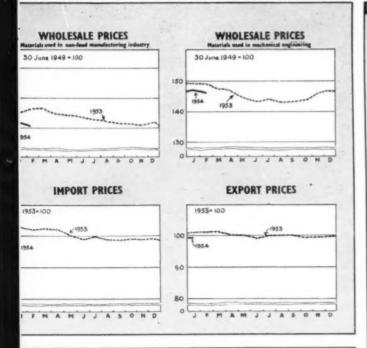


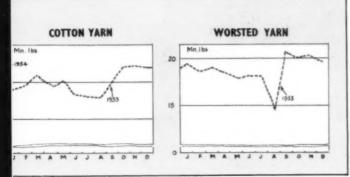
BANK DEPOSITS

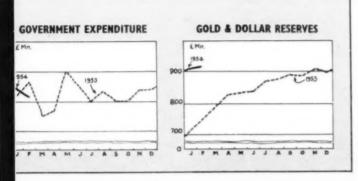


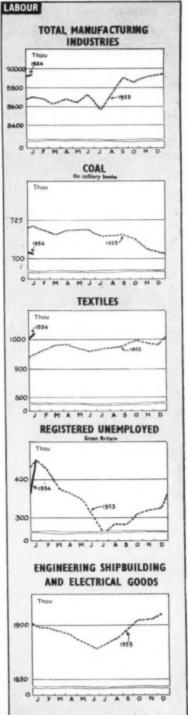
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PR4

HOME MARKET REGIONAL SURVEYS (cont. from page v)

trade is not fully occupied, and this is a seasonal lull. The motor car manufacturers in the area have unfilled jobs Southampton ship repairers, who have now completed the winter overhaul of the large liners, are not steadily employed throughout the year. Scope here for getting some of the business lost by other repair yards to the

Continent!

Though building and construction was interfered with by bad weather, the demand for bricks, for instance, did not have its usual seasonal fall. Last year's brick production in the area was a record at 152 million-over 274 million more than in 1952. Still, supplies of bricks and roofing tiles are not easy; other materials, including cement, are readily available. Building figures in Portsmouth should be noted by sales managers, for progress last year was considerable. Nearly £12 million worth of building work, including housing, was licensed, compared with under £9 million worth in 1952.

South-Western

OBACCO, cocoa, paper and shipping are the traditional industries of the area. Not only these, but a growing number of newer ones, of which aircraft and vehicles are the most important, are prospering. All this has attracted wholesaling organizations. and makes the area a rapidly-growing market for national distributors. A consistently high level of industrial activity in the south-west seems likely for the rest of 1954. The threat of German and Japanese competition is. however, made apparent by the redundancy of about 250 workers in general engineering.

Amongst the newer industries Pros-PECT last month mentioned a phosphorus factory. This, and a somewhat older plant producing carbon black, are savers of valuable dollars. There is also a new factory making detergents. Chemicals, aircraft, aircraft accessories and coal mining are all expanding. So are flour milling, general and civil engineering, as well as the service trades, including those

connected with the docks.

All this thriving activity is not concentrated merely on Bristol and the growing industrial estate near Avonmouth. Gloucester and Cheltenham. which with Bristol now account for a very substantial part of British aircraft production, have attracted ancillary manufacturing industries and trades to what were, before the war, less active communities. Plymouth and one or two other centres in the south-west are all growing in industrial importance. Sales managers, seeking even progress throughout the country, will have noticed that the south-west is progressing more rapidly than other areas. Certainly for the next six months or so the prospect is good.

It is encouraging that the Bristol engineers, H. O. Strong & Sons, have managed to get an order for boxmaking plant worth £200,000 from Turkey. German competition was intense. Despite this and Turkish sterling difficulties, business can still be

done there

Eastern

INDUSTRY is expanding rapidly, especially in the new town areas, and agriculture is thriving. But there is some slack in the building and contracting trades now that the housing drive has levelled off and sea coast flood prevention schemes near completion

Essex fruit farmers and packers are worried because housewives buy less fruit; moreover, there has been a large increase in production. A co-operative advertising campaign may be needed at least to stabilize, if not

increase, the market.

Building work authorised last year at £116 million was 17 per cent greater than in 1952. Industrial and agricultural development schemes also increased in number and value. The Regional Board for Industry is considering a scheme involving the linking of factories for group heating and power supplying.

Of the "new" towns where industry was already well established before they were designated new. Hatfield. Hemel Hempstead and Welwyn are expanding very well. But Hatfield still has surplus female labour and would benefit from new industries. Harlow has already 42 new factories and ten are building. Basildon lags

somewhat behind.

Cambridge University's Chemical Engineering Department has built a machine which generates electricity directly from the reaction of hydrogen and oxygen. As an energy-converter and large-scale storer of electricity. this fuel cell may even reach 100 per cent efficiency-there are, for instance, no moving parts.

Imperial Chemical Industries' new

laboratory for plastics research at Welwyn Garden City is "flexibly" constructed, the first building of its kind in this country.

The grounding of the Comets did not prevent De Havilland from getting an order for three more Comet IIIs from Air France

Northern

REPORTS from the north-east coast continue to be encouraging. Though the percentage rates of unemployment are high (2.5 per cent for males and 3.6 per cent for females), industry is active. Iron and steel firms, apart from a little short-time work, are busy, and so is general engineering, but electrical and structural engineers are working through their order books. Shipbuilders and repairers are fully occupied, and so is the building and contracting trade. The clothing, drink and distributive trades are going through their off-season. The outlook is cheerful enough, in spite of the much publicised worries of shipbuilders about shortening order books.

Light industry, short of labour elsewhere in Britain, continues to show great interest in the north. Twentytwo development certificates were issued in December and January, compared with fifteen in October and November. Altogether these schemes will provide potential employment for over 700 men and over 1,250 women. Newcastle, Middlesbrough, Gateshead, Stockton, Wallsend, Peterlee and Aycliffe are amongst the centres that will benefit from diversification. A number of established tenants on industrial estates are applying for more factory

That 12 per cent more electricity was distributed in the eight weeks ending February 5 this year than in the corresponding period twelve months earlier reflects the generally satisfactory conditions. Britain's first atomic power station is being built at Calder Hall near Sellafield, Cumberland.

There is great interest in the projected road tunnel under the Tyne, the likely cost of which is now estimated at £9 million. If Government sanction can be got-and that is not likely for some time-the project would help to reduce unemployment during construction and greatly speed the movement of goods.

Between £250,000 and £500,000 is to be spent at Ashington, Northumber-

land, by the National Coal Board on new workshops for the repair of colliery machinery. This means work for at least 300 men.

N. Ireland

THE Ulster Government has plans to increase employment. Local grants to help the purchase of new plant and buildings, made on an annual basis for three years, are the main items in the programme announced by the Minister of Commerce.

The Minister of Agriculture has also produced plans to boost farming, including the growing of flax. Already the Northern Ireland Government has spent about £1 million in the last five years in an attempt to help flax prowers.

Dunlop are nearly ready to open a 67,000-sq. ft. factory begun late in 1952: this will produce woven rayon cord for all types of tyres. About 120 people will find jobs in this new industry. The Government has provided the factory, to the design of the company's architect, under the Industries Redevelopment Act of 1945.

Another effort to bring Northern Ireland to the notice of British and foreign businessmen will be made at the British Industries Fair. The Northern Ireland Government will have a 3,000-sq. ft. stand in the Earls Court textile section.

Belfast's 1500th ship (Harland and Wolff's s.s. Tintagel Castle) was recently launched. Shipbuilders are not happy about the number of cancellations. In the words of Sir Frederick already offering a diesel engine for

Rebbeck, Harland and Wolff's chairman, "they have been enough to make a year's output in a good-sized yard." Belfast has lost its position as the home of the world's largest shipbuilding firm. It is now fifth or sixth in line, for two Swedish firms, two German and one American have, according to Sir Frederick, exceeded Harland and Wolff's output.

The linen industry is far from happy about future prospects. Hopes were dashed by the Chancellor's statment on purchase tax, which means not only that the tax will continue, but that the linen industry is not being relieved of its disabilities under the "D" scheme, vis-a-vis rayon and cotton. Furthermore, like their opposite numbers in Lancashire, businessmen in Northern Ireland do not like the Anglo-Japanese trade pact.

Midlands

THE battle for many of the world's motor car markets is intensifying. After German Daimler's price cut, other German firms interested in the small car field, notably DKW, are also likely to announce lower prices. The Geneva Show points the way-more new models and lower prices. So far competition has not meant serious cuts in the work of Midlands manufacturers. although schedules are subject to many changes.

The possibilities of diesel engines for private cars will soon be tested. The Standard diesel Vanguard will be available next month, and Ford are

2- and 3-ton lorries. (As in the case of the Standard, the engine is an adaptation of that used for tractors.) Rover. too, are believed to have developed a diesel engine, but no production facilities. This may be one of the considerations behind the proposed Rover-Standard merger.

Heavy steel plates and sections are much in demand in the Midlands. Boiler makers and manufacturers of railway rolling stock are making the heaviest call on inadequate supplies. Their order books look good for the rest of the year.

Makers of medium sections are now supplying customers more quickly, outstanding orders have been worked through and new orders are not coming in as fast as a year ago. Re-rollers tend to be short of work and are likely to find it increasingly difficult to get new business, in spite of price cuts for small bars and other items. Continental competition is too much for them

Foundries supplying the motor trade will be fully employed for many months ahead. Although most foundries for light castings are working steadily. demand is not increasing as fast as was expected some months ago. In spite of the difficulties created by local shortages of steel, the Midlands have another six months of prosperity ahead

Manufacturers of ferrous as well as non-ferrous tubes are fully employed and building up order books. This reflects the high level of medium and light engineering activity in the Midlands, for tubes are a basic "raw" material of many industries.

Pottery manufacturers in the Stokeon-Trent area, although they have done very well at home and abroad since the war, are not finding business conditions easy. There is a labour shortage, and much extremely expensive re-equipment had to be undertaken after the wartime concentration of the industry. The biggest problem today, however, is to make sure that the non-sterling markets, now closed, do not lose their penchant for British pottery. It must, however, be kept in mind that tableware and other domestic pottery are only part of the industry's output. Electrical insulators of all kinds, sanitary goods and roofing tiles, all of which are in steady demand just now, are taking an increasing share of production. In spite of all the difficulties, the industry should be busy for many months, and the area quite prosperous.

The Numbers of Persons Registered as Unemployed at February 15, 1954, and the Percentage Rates of Unemployment in each Region.

	NUMBER		PER-	
Region	Total	Inc. (+) or Dec. (—) in Total compared with Jan. 11, 1954	CENTAGE	
London and South-Eastern	77,778	+ 2,681	1.5	
Eastern	21,399	+ 3,884	1-9	
Southern	17,282	+ 2,327	1.8	
South-Western	21,973	+ 1,208	2.0	
Midland	16,240	- 144	0.8	
North-Midland	12,213	+ 1,549	0.9	
East and West Ridings	23,741	+ 500	1-3	
North-Western	57,061	- 471	1.9	
Northern	35,522	+ 11	2.8	
Scotland	74,622	+ 2,380	3.5	
Wales	29,472	+ 522	3.2	
Great Britain	387,303	+ 14,447	1.8	

EXPORT MARKET SURVEY

In spite of growing balance of payments difficulties, Norway should be a good market for the rest of this year. There is, of course, the usual proviso that world trading conditions do not deteriorate, for a serious slump in the United States would cut deep into the country's earnings from the export of timber products and from shipping. The Government is bent on keeping employment at a high level and has embarked on a four-year project to boost investment and production and, therefore, demand. Hitherto restricted imports are to receive (or have already been given) lower quotas.

As Norway's future prosperity depends very considerably on the exploitation of its vast hydro-electric power resources, there is a large demand for heavy electrical plant, provided deliveries are better than those of the heavily booked home industry and those of continental makers. There is also a substantial market for electrical domestic appliances. A two-year experimental TV programme has stimulated the demand for TV receivers—incidentally, Pye shared the orders for transmission and studio equipment with Philips of Eindhoven.

The market for motors is uncertain. Imports of cars and commercial vehicles are to be limited this year. Although tractors and other agricultural machinery will be admitted freely, the demand can be expected to slacken because investment in farm mechanization is not likely to be large enough.

Norway (population 3,300,000) will never be a major market for Britain, whose exports there fell from £65 million in 1951 to £63 million last year. But British manufacturers should not allow the difficulties they will meet this year to deter them. British products have a good name and this country has a reservoir of goodwill. Our shipping costs are no higher than those of our competitors. However severe the drop in sales of British goods to Norway might be this year, and perhaps next year, Norway's long term prospects are good.



CEYLON is borrowing £25 million in the London market to finance development, and another \$22 million loan from the World Bank for a major hydro-electric scheme. This borrowing will help Ceylon to go some way

towards her ambitious goals. United Kingdom capital goods exports should continue to expand, although consumer goods imports must be severely cut sooner or later.



So much has been heard of Japan either as a competitor in export markets or as a buyer, mainly from the overseas sterling area, that a closer look at that country as a market for United Kingdom goods is appropriate. In 1951 and 1952 British sales to Japan were around the £9 million mark, but in 1953 they exceeded £18 million. In spite of the need to make 1954 an austerity year, Japan will have to buy motor vehicles and ships, chemicals, machinery, raw wool and wool textiles. British exporters of these and many other lines can count Japan as a market worth pursuing.



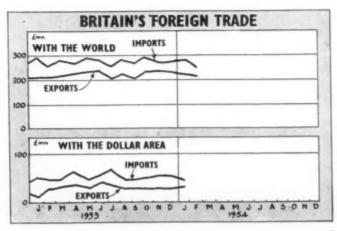
UNDOUBTEDLY the Anglo-Japanese trade and payments agreement will make it difficult for Britain's exporters of cotton piece goods to keep up their sales to British West Africa. Last year, at £15½ million, these were already over £6 million less than in 1952, but only slightly under the 1951 figure. Even the bigger buyers in the market, in spite of their long and close association with Britain, will not allow sentiment to interfere with business. Japanese textiles, if cheaper, will be bought.

Makers of products other than textiles should do well this year.

Particularly mining and construction plant, motor vehicles, railway stock and equipment will be needed to keep pace with developments. Chemicals and pharmaceuticals, hardware and tools should all find bigger markets. In spite of the predominance of well-established large buyers for the five territories (Nigeria, British Cameroons, Gold Coast, Sierra Leone and Gambia), manufacturers find that their needs and tastes are not necessarily similar. Certainly these areas should be treated as four distinct markets (Nigeria and the Cameroons are similar enough).



THE signing of the International Tin Agreement by Britain, the announcement that Bolivia will sign and the attitude of benevolent neutrality adonted by the United States Government may together be taken as encouraging indications of trade prospects with Malaya. Not only is the outlook for tin moderately good, but commodity prices in general have held up well in the face of the United States recession. The Financial Times index of raw commodity prices has returned to the level of April last year, when the truce in Korea was first becoming a practical hope. One reason for the steady commodity position is the general attitude of the United States Government towards its own stockpiles, which will not be used to depress prices. British exporters to colonial territories may obtain some encouragement from this point





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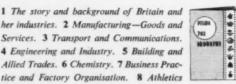
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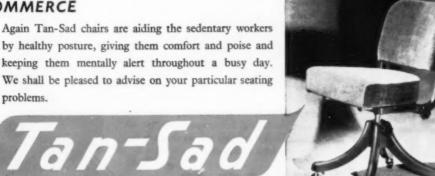
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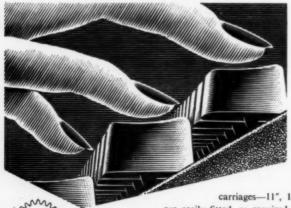
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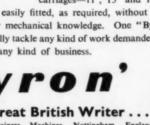
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urroughs on microfilming

The March of Business

PLANNING EXPANSION?

WHERE lies the future of a small business firm whose founder is a genius in one particular field, but who has no background of experience in managing a growing firm? What is to be done when the firm outgrows the size which can be personally supervised by the head, and when responsibilities must be delegated to departmental heads? Two alternative solutions to these problems were suggested by Mr. E. F. L. Brech, senior partner of Urwick, Orr and Partners, in an address to the Conference for Small Firms at Ashorne Hill last month, arranged by the British Institute of Management.

Mr. Brech suggested that one solution was for the head of the firm to appoint a personal assistant—a young man with a good educational background and some special training in management techniques. He would be given no direct authority in the firm, and his appointment would be for a limited term of years, but he would act as a channel through which the head of the firm could make contact with the right type of outside advice on manage-

ment.

Mr. Brech's proposal was that the young man, with his limited experience, would not himself presume to advise on management problems—on the setting up of departments, the defining of authority, the appointment of executives and the introduction of control systems. He would, however, be a kind of special secretary to the head of the firm in regard to the problems of growth and the obtaining of appropriate outside help.

The other suggestion made by Mr. Brech was that the businessman who frankly recognized that his flair lay in a special field, and that he was not interested in general management, could promote himself to chairman of the company, retaining responsibility for research and development. He could then appoint a managing director or general manager, of wide experience, to control the day-to-day work of the firm. It was suggested to Mr. Brech that if the head of the business was not a successful general manager, he could hardly expect to be successful in making such a key appointment. To this Mr. Brech replied that the head of the firm would need outside help in making the appointment.

One type of body capable of providing such help would, of course, be an experienced firm of industrial consultants, but another would be an industrial development company which

had taken a financial interest in the company. There will be an article on the rôle of the industrial development company in financing the smaller firm in the next issue of BUSINESS.

M.R. KENNETH HORNER, 28year-old managing director of George W. Horner Ltd., the County Durham sweet manufacturers, uses twoway radio to work while travelling by car between his office and his home. About an hour a day is spent travelling back and forth, and during this time, which he calls his "thinking period," he transmits instructions direct to his

INDUSTRIAL PHOTOGRAPHY

L AST month Business carried a note (page 37) on "Print in Industry." This month, the importance of good industrial photography happens to be topical, for the Federation of British Industries has just issued a booklet on the subject*, as the fourth in its series on publicity media. The booklet has been launched at the recent opening of an exhibition of industrial photographs at Church House, Westminster.

There have been many complaints

* "Photography in Industry," 3s.

from overseas, in the last few years, on the standard of photographs sent abroad by British industrial firms for advertising and general publicity purposes. The F.B.I. booklet is therefore very timely in drawing the attention of business firms to the facilities available for obtaining good photographs.

That such facilities are available can hardly be doubted from a glance at the accompanying photograph of the charging of a United Steel Companies open hearth furnace. This photograph, which appears in the F.B.I. Exhibition, is also one of many striking shots presented in a book on "Men and Machines," produced recently by Mr. Walter Nurnberg, F.I.B.P., F.R.P.S., and designed to show that a black and white photograph can capture the atmosphere of industry without striving to be "arty-crafty."

* * *

A T the recent annual meeting of the National Association of Distributors of Office Equipment, Mr. T. G. C. Hill, director of Coulson, Hill and Co., Ltd., Newcastle-on-Tyne, was elected president. The retiring president is Mr. H. C. Gunn, director of Blue Seal Products Ltd., Grays Inn Rd., London.

KNOW YOUR BANK

WITHOUT doubt one of the biggest problems for the head of a small or medium-sized firm is the provision of finance for expansion. He is generally handicapped by the smallness of his firm, which may be regarded by most investors as too risky a venture. He is also handicapped by his own lack of expert knowledge of

What Can be Done — See Industrial Photography, above



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finance. To help the small businessman to overcome this latter handicap, a series of articles on "Finance for the Smaller Firm" begins in BUSINESS this month. The series will describe, month by month, the facilities provided by the banks, the industrial development and finance companies, the issuing houses and other institutions. These articles should appeal not only to those heads of small firms who have never found the time to take a special interest in finance, but also to the rising executives of larger firms who, as specialists in other fields, feel that they must begin to take some interest in their company's financial problems.

The first article in this series is on "The Joint Stock Banks and Discount Houses" and appears on page 49. The points covered in this article are: 1—The sort of capital a bank or

discount house can provide.

2—The limits within which it can provide capital.

3—How much, in interest, an advance

is likely to cost.

4 What sort of prospects and security

must be offered to the bank.

5—How an application for an overdraft will be handled by the bank.

NEXT MONTH

B.I.F. ISSUE

Trends in Equipment Design

A special, additional section on Trends in Equipment Design, covering a wide range of industries.

Selling Techniques

Also a number of articles describing successful Selling Techniques, and how they are applied.

Export Opportunities

There will be an article by Dr. H. Catleen surveying the opportunities for exports in a large number of overseas countries.

THIS MONTH'S COVER PICTURE

Symbolises the role of finance in industry, and coincides with the commencement of a new series of articles on Finance for the Smaller Firm. (see page 49)

DAVID BROWN AND SONS, inform their employees of important orders received by the firm, but also of those lost through foreign competition. At a meeting of departmental heads and workers' representatives, Mr. A. Avison, a director, recently gave warning of increasing competition from Germany and the likelihood of a growing challenge from Japan and other countries.

BUSINESS NOVELS

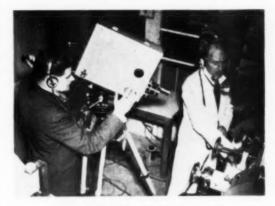
ONE of the least developed fields
of literature is the business novel.
Moreover, such novels as have been

APRIL, 1954

People Products Places



LEEDS EXHIBITION—Fifty-four firms showed a wide selection of modern office equipment at the Business Efficiency Exhibition organized by O.A.B.E.T.A. which was held at Leeds in February. The exhibition had a record attendance of over 7,000 and was opened by the Lord Mayor of Leeds, Alderman D. G. Cowling, M.B.E., J.P. Photograph shows M. G. Wright, managing director, Art Metal Construction Co., demonstrating the Rollindex to him and S. Gordon Sloan (left), President, O.A.B.E.T.A.



FACTORY TV—New industrial television camera can greatly speed up and simplify the training of workers. Reasonable in price, it is self-contained (only two connections are necessary) and trained personnel and special lights are not needed. Large groups of students can watch processes in close-up on a monitor screen in their lecture room some distance away.

LIKE AND LEARN—Businessmen can learn something from the Livingstone primary school at New Barnet. A new technique has been used for displaying pictures in a decorative and educational manner. Photographic enlargements of woodcuts and engravings have been incorporated into the surface of plastic panels; they cannot be damaged and are cleaned with a damp cloth.



P.P.P. Continued



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written about the business world have been predominantly against it. They have been for the most part written as sneers and caricatures of the life of successful businessmen—of ruthless and high-powered deals, merciless competition and sordid private lives. Perhaps the most famous of all is "Babbit." by Sinclair Lewis.

Two reasons for the unhappy state of business fiction are: firstly, that the type of person who writes novels generally knows nothing about business. And what he does know about it is likely to have been learnt from second-hand, biased sources. Secondly, the successful businessman is unlikely to stop his career in the middle in order to write a novel against an authentic background.

Recently, however, there has been published a business novel with an authentic ring, and with a moral for all heads of firms. "Executive Suite" by Cameron Hawley* describes in very readable style the hectic 24 hours after the president of a large American corporation has died, leaving no nominated vice-president. There is an ensuing battle of wits, charms and other virtues and vices, to see who wins the succession.

Now that the world has become rather more productivity-conscious and aware of the importance of good business leadership, perhaps there will be more novels of this calibre.

* Hammond, Hammond & Co., 12s. 6d.

* * *

AN innovation at this year's B.I.F. is the provision of shop windows for manufacturers in the lighter industries who are unable to man the ordinary type of stand. This idea has proved so popular—no fewer than 70 firms booked windows in the jewellery section at Olympia—that a total of 165 windows are being installed in various sections at both Olympia and Earls Court.

Windows which cost £27 10s. are six feet wide, four feet high and two feet deep. A somewhat smaller size is priced at £25. Exhibitors' names and addresses are painted above the glass panels of the windows, which are attractively lighted and finished.

* * *

SMALL FIRM KNOW-HOW

A T the recent International Management Congress held at Sao Paulo, Brazil, the British contribution was a paper on "The Application of Modern Management Techniques in the Small Enterprise." This was divided into four parts. The first discussed the differences between the management problems of small and large firms, and a tentative conclusion was reached that the management techniques most valuable to small firms are likely to be

People
Products
Places



RADIO BOOKING—Bright idea that is bringing in extra business is this mobile seat booking office being used by Keith Prowse Ltd. at race meetings, markets, and sporting events. The van is fitted with V.H.F. radio equipment for making bookings through the London clearing house.

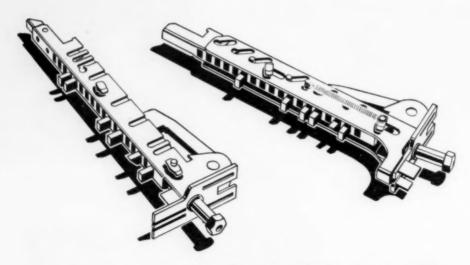
DOLLAR EMPRESS—Ordered despite the risks of increasing labour and material costs, this 22,500-ton Canadian Pacific liner will be built on the Tyne. With a sister ship now building on Clydeside, she represents a dollar order of over £,10,700,000. The model shows the obstruction-free decks that will allow maximum recreation space to the 150 first-class and 900 tourist passengers. On the right is English-born H. Arkle, new European general manager of Canadian Pacific Railways—owners of the new vessels.







ROUBLE EARNER—25 of these Timber Wolf machines worth £100,000 have already been delivered to the U.S.S.R. They are part of a large order recently obtained by the British manufacturers of what is the first straddle-carrier to be made in the sterling area. All negotiations for the deal were carried out with the Soviet trade delegation in London.



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those which enable them to minimise their need for liquid resources by skilful purchasing, careful control of expenditure, the reduction of stocks to a minimum without interrupting production, the expediting of work through the shops and so far as possible the standardization of parts and materials.

These are all very useful ideas, but can they be applied in practice? The second part of the British paper discussed some of the chief "management techniques" and how far they can be applied, if at all, to small firms. The techniques considered were standardization, product research and development, work organization, work study, organized purchasing and material control, budgetary control, standard costing, sales promotion, joint consultation and job training.

One of the examples given showed how budgetary control has been applied in a small general engineering and jobbing factory. Because of the fluctuation in orders it seemed impracticable to prepare a budget by which the firm could control expenditure. The problem was tackled from the other end by estimating what would be a reasonable return on the owner's capital and adding to it the cost of paying interest on the company's debentures and bank overdraft, and the fixed overhead expenses of the firm. From this grand total of overheads it was possible to determine, on the basis of the firm's pricing policy, the target sales to ensure the required profit. A budget was then prepared with such a target in mind.

This seems to be the sort of calculation that most small businessmen would keep doing in their heads or on the back of an old envelope, just to feel sure that their activities were profitable. Unfortunately, however, there are some who do not even know how much capital they have locked up in their businesses.

The British paper concluded with a discussion of some of the reasons why small businesses do not apply management techniques to their activities, and with a reference to the facilities available to small firms to assist them in applying such techniques.

* * *

THE Office Management Association has provided a valuable service to industry by publishing a book on "Grading of Clerical Work" (21s.). It gives detailed specifications for fifteen of the main types of clerical work, including cash control, payroll, certification of invoices and ledgers, typing and shorthand. Each type of job is analysed and assigned to one of the six job grades used by the Association to indicate the calibre of clerk required. The book also describes how to apply a merit rating system to clerical workers and to devise appropriate salary scales.

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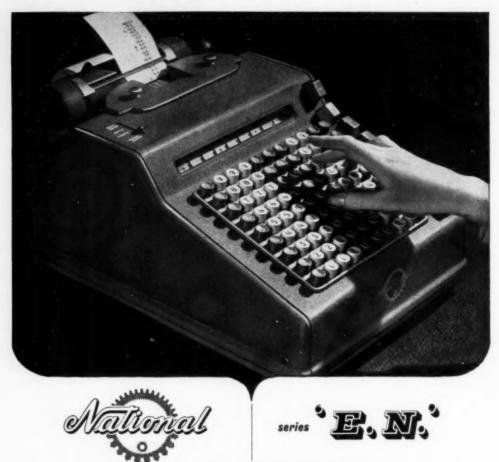
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WHAT TAKES A MAN TO THE TOP ?

Six Personal Qualities are the Key to Success in Industry

Says Raymond Parmenter

LEADERSHIP is essential now as ever. Many people believe it is even more needed today, in a democratic age, than it was in times when the luck of birth automatically conferred authority.

In industry the man at the top still has to take final decisions.

Despite joint consultation, works committees and the like, the role of top management is to manage. Most men look for leadership.

 $B_{\mathrm{What}}^{\mathrm{UT}}$ what makes for leadership? How do men get to the top? What qualities make them stand out among their fellows? These are the questions this article sets out to answer.

MINISTER who served in the Cabinet both under Sir Winston Churchill and later under Mr. Attlee was once asked how the two Prime Ministers compared in the way they handled a Cabinet meeting. "They were totally unlike each other," he said, "but both equally impressive in their different ways. After a meeting presided over by Mr. Attlee one emerged with the conviction that decisions had been made and many things accomplished. After Mr. Churchill's, on the other hand, one came away very conscious that one had been present at a great occasion."

The fact that in the sphere of political leadership two such utterly dissimilar men could successively hold the highest office in the State, suggests that there can be no single universal recipe for successful leadership.

A leader is made not only by his own

MINISTER who served in the Cabinet both under Sir Winston Churchill and later under Mr. was once asked how the two Ministers compared in the way call him to the highest office.

Both of our Prime Ministers had exceptional personal qualities, both possessed those special attributes that were acceptable to the men who promoted them, but both depended at the crisis of their careers on the special circumstances of their time. The conflict between more colourful but less acceptable personalities opened the way to Mr. Attlee, just as the war which Sir Winston Churchill tried so hard to prevent gave him the greatest task of any leader in our history.

Likewise in industry leadership falls to those who not only have the right personal qualities, but are acceptable to their colleagues and are favoured by circumstance. It is intended in this article to study only the personal qualities of our leading executives, but at the same time the other factors which determine success must be kept in mind.

Decisiveness

Lack of it can wreck a firm

What are the essential qualities required in a chief executive? The first quality, in my view, is decisiveness. The power of decision is not given to all men. It is above all a masculine quality, a measure of virility and an essential ingredient of success at all stages of responsibility, in parenthood, in foremanship, in middle management and above all in a chief executive. "I like the old man—you know where you are with him—I shall be sorry when he goes—you can always get a decision out of him"—these are high compliments.

There is no special virtue in the snap decision when there is a time to reflect, but it is a notable fact that just as the best extempore speeches are made by the men who customarily take the greatest pains in preparing their speeches, so the best quick decisions, when time is pressing, are made by the men who ordinarily take the greatest care to collect the maximum amount of relevant information. Strength of character nowhere reveals itself more strongly than in this power of making decisions.

There is one kind of training which makes decision doubly difficult—that of the scientist. Decisiveness is not a characteristic of scientists. They and other highly academic individuals sometimes find executive advancement difficult for this reason. The need for decisiveness is at once a reminder that top management is an art. The

WHAT TAKES A MAN TO THE TOP?

scientist spends so much time in studying the tangible that he may forget that his picture of a management problem, in which the human factor is always present in some degree, contains many intangibles.

Decisions require art. They frequently have to come as much from the heart as from the head, and the best possible decision must often give way to the best one in the circumstances. It is, therefore, one of the problems of our increasingly technical age that administration and science are being every day brought closer together. The ideal of the ancients, that of 'philosopher king,' might quite well be translated in our times by 'scientist administrator.'

One of the worst failures among foremen is sometimes the promoted star mechanic. His promotion may arise

WHAT DO YOU THINK?

Some readers will disagree with the author's list of the six personal qualities that take men to the tob.

The Editor will therefore welcome letters on this subject from readers. These should be addressed to The Editor, BUSINESS, 180 Fleet Street, London, E.C.4.

through the dangerous assumption that the man who can best operate a machine can best run a team of men operating machinery. The same danger can be seen at the top, where a man professionally eminent as an engineer, chemist or lawyer is assumed—often wrongly—to be a suitable choice as a chief executive.

There is no greater danger to an organization than lack of decision at the top. Indecision is infectious, it induces lethargy, apathy and a "couldn't-care-less" attitude right down the line. Boldness in decision can even make up for bad decisions and many a great man will reveal with pride how his pertinacity in the follow-up has rescued him time and again from the worst consequences of his mistakes.

Vitality

The gift of quick recovery

The next quality is related to decision, since it is the quality needed for its continuation. This is vitality. Confidence can only be inspired if the process of decision is uninterrupted, and in a busy executive this calls for exceptional vitality.

This quality is not the same as health. There are many healthy people who

have small powers of endurance. The leader can only acquire exceptional experience and knowledge of men and affairs in all matters related to his business if he has exceptional powers of endurance. Long hours, long periods of nervous strain must not cause in the leader a loss of personal vitality. So the gift of quick recovery is an essential ingredient in leadership.

Sense of Responsibility

This urge 'keeps a man going'

The third quality, related also to vitality, is the inner urge which keeps a man going. It is the sense of responsibility. The quality of responsibility is founded upon an acute sense of the dependence upon the leader of his colleagues, of his staff, of his customers and of the society in which he lives.

This inner conviction is part of his abiding belief in himself. It is often the cause of his fanatical enthusiasm, of his ability to win the support—the faith, if you like—of those working under him at all levels.

In former times it was not felt priggish to talk of a sense of duty. To-day this phrase has been degraded into implying an undue slavishness to routine. But all societies are founded upon routine, though it is a characteristic of human society that it is capable of change. A great leader, however sensitive to the changing demands of a rapidly changing society, must always pay due respect to the requirements of tradition and even routine. This regard for the known ways, which sometimes riles the impatient innovator, is one of the aspects of the leader's sense of responsibility.

Sense of Balance

Even when taking risks . . .

The fourth quality, related to this, is a sense of balance, a sense of proportion—the ability to see the whole of a situation, unmoved by the eloquence of specialists or partisans. This is the opposite of the qualities of the gambler but it does not rule out the taking of risks.

The leader is one who knows when to take calculated risks. He weighs the odds, he knows the price, he goes into a new project with his eyes wide open and with no illusions. This

The picture on page 45 appears by courtesy of British Jeffrey-Diamond Ltd., Wakefield

quality of leadership, requiring as it does a good deal of accumulated wisdom and experience, does militate somewhat against the emergence of very youthful leaders. It is characteristic, therefore, of young industries where the risks are high to call for youthful leaders, while the more established industries tend to put their faith in age and experience.

The need for a sense of balance may be demonstrated in two common management requirements; first, in the sorting out of priorities and secondly in the ability to delegate. It is a common remark among managers that the problem is often not what to do but what to do first. In no field is this ability to arrange the priorities, to keep several balls in the air at the same time, so crucial as in the organization of a chief executive's own time.

The ability to delegate presupposes the courage to delegate. A man afraid of his own position bolsters up his feeling of security by trying to make himself indispensable. By contrast, the successful leader on his way up constantly organizes himself out of his own work, training his subordinates to take over more and more of his work and gradually leaving himself freer to devote time to problems of a higher level. He must, therefore, cultivate his powers of selection so that he deals only with exceptions to the normal, allowing himself to look forward rather than be overwhelmed by day-to-day activities

The power of decision, combined with a high sense of responsibility and the gift of perspective, are all required in the type of complex situation which may call for a planned withdrawal, a retreat from an untenable position, or a "Dunkirk" which is needed to prevent a "Waterloo." To know when to pull out, and to do so without loss of morale—this is a high test of leadership.

Persuasiveness

Often, the ability to listen

The fifth quality, the most difficult to describe but the most human and the most frequently employed, is the quality of persuasion. It is one thing to know what is wanted, it is quite another to persuade others to get it done. Superficially, the gifts of persuasion appear to be the ability to talk, to write, to make speeches and to influence by personal behaviour. But the foundation of all these gifts is human understanding and, above all,

the ability to listen. Take for example the simplest situation, the personal interview-the man-to-man talk

A good definition of a bore is a man who talks about himself, when you want to talk about vourself. A leader will first allow you to talk about yourself, and will then continue by talking about yourself until you are made to realize that your best interests are served by doing what the situation demands, which may well be what he wanted in the first place.

All successful selling is based on a study of the market. The distinctive quality in leadership, the ability to persuade, presupposes the ability to understand the people who are persuaded. Reasoning is not enough. Chester Barnard, a former chief executive of the Bell Telephone Company. New Jersey, and now director of the Carnegie Institute, has described this need:

"Reasons must be given, but they must appeal to those attitudes, predilections, prejudices, emotions, the mental background, which govern actions. This implies a task of great difficulty. It requires discerning the mental state and processes of the person to be convinced, adopting his mentality, 'sensing' what is valid from his point of view and meeting it by apparently rational expression, which in fact may be utterly fallacious. A little reflection will indicate that this is a great intellectual feat, that it involves extraordinary mental processes different from those required when other purposes are involved."

This faculty of understanding the attitudes of others is the basic quality which is needed to develop the management skill of persuasion. Both the technique of listening and that of persuasion can be taught, and it may comfort the reader that however difficult the other qualities of leadership may be to attain, this is a field in which progress can be made by study and practice.

Listening and persuading take time, and where organizations are widespread the task involves much tiresome travel. The time a chief executive is prepared to devote to this part of his duties is a measure of his strength. "To see and be seen"-this is the watchword of many great men of to-day. Field Marshal Montgomery's celebrated tours before battle come to mind at one end of the scale, and at the other, such homely phrases as "the farmer's boot makes the best muck." The matron of a great London hospital, in her retiring speech, summed up this point when she told her chief assistants: "Keep an open THE "BIG 6" OF SUCCESS

I. DECISIVENESS

Better a bad decision than none at all

2. VITALITY

Decision-making cannot stop -so vitality is essential

3. SENSE OF RESPONSIBILITY

The inner urge which keeps a man going

4. BALANCE

The ability to see the whole of a situation

5. PERSUASIVENESS

To understand. To listen. Reasoning is not enough

6. CHARACTER

Lucky the man with an unforgettable trait

mind, listen, and use your feet,"

The facts as presented in reports and financial statements can form a basis for action, but personal contact and personal observation are more revealing because they allow the employment of the leader's greatest gift, the sixth sense, which tells him, beyond reason and superficial appearances, whether the situation is, in fact, good or ill. From these twin foundations the powers of expression can be set to work, through all the forms of personal communication which modern science is helping to speed up and render more effective.

Communication is the highest of management arts, and most management training must be directed towards the development and refinement of this ultimate skill. Clear and cogent expression in conversation, letters, reports, speeches and all forms of address, in terms carefully adapted for each and every type of audience, constitute the chief executive's greatest instrument in the conduct of his vocation.

Character

The link that binds all

Finally, we come to the sixth chief quality of the leader-character. "Paint me as I am," said Oliver Cromwell, 'warts and all." An executive might well be blessed with all the virtues which we have described above and still be lacking in the distinctive mark which sets the final seal on his leadership. He must be a human personality, a "character." He must possess

some unforgettable trait which makes him unique

It is oddness and imperfection that give tang and bite to personality. Frank Pick is still a legend in London Transport. A "character" himself, he enjoyed looking for similar qualities in others. A little oddness, a few foibles. a dash of irresponsibility and a relish for inconsistency were to him the very hallmarks of a good executive. Marshal of the Royal Air Force, Lord Trenchard, now an industrial chief executive, has in his long life made three careers-in the Air Force, the police and in industry. His unforgettable trait is his voice. It is unusually resonant and it has earned him the nickname "Boom."

His greatest leadership quality is his vision-his ability to see the needs of his organization years ahead. Even at 80 years of age his favourite remark is "What worries me is the next twenty Because of his odd personal trait, his insistence on planning and foresight will go booming down the years unforgettable to all who met him.

A leader must not be too predictable if he is to keep the members of his organization on their toes. The most unpredictable man in recent years to hold high office in both industry and the State is Lord Beaverbrook. attitudes of mind among the civil servants of both the ministries in which he served during the last war received such an electrifying jolt that many of them have still not recovered.

These then are, in my opinion, the six personal qualities essential to a chief executive in industry. But what of the man who has arrived and successfully held his position at the top?

"All power corrupts," said Lord Acton, "and absolute power corrupts absolutely." The final test of leadership is the willingness to give it upto prepare the successor, to plan his acceptance, to ease the change-over and avoid the gaps and wounds of revolution.

The ability to organize the succession is the undoubtedly final test of maturity in a leader. It calls for command over himself, over his people and over circumstances. It evokes the employment of all the leadership qualities at one and the same time.

In conclusion, to place these six personal qualities in their proper perspective: there are always three elements in leadership, the personal, the social, and the historic-the man, his men and their moment. The man must deserve his power, the organization must deserve the man and both of them will need the favour of circumstance.

An Inside View of German Export Competition

By H. CATLEEN, D.Sc., M.I.Ex.

In the case of consumer goods at least, the Germans do not appear to be such efficient and enthusiastic exporters as is widely believed

AVING just finalized an economic survey of the German "miraculous" recovery, some facts have now transpired which, I think, the manufacturers of this country would like to know—particularly those who are becoming increasingly uneasy about German export competition.

My work has brought me into contact with many German manufacturers of consumer goods, so my findings refer only to this category, and not to heavy engineering or capital goods in

general.

Germany has now achieved a favourable balance of trade with the dollar area, but this resulted mainly from two factors—neither connected with normal export trade. First factor is the 200 million dollars spent yearly by the American occupation administration, and the second is Germany's comparatively small imports from the dollar area, which can be explained by their 20-year-long training to live "autare".

The export volume of Germany in 1953 was only one-third above 1936 compared with our two-thirds. France doubled and the United States trebled in 1953 their respective export volumes, compared with 1936. In consequence, Germany has still quite a way to go to reach the new export level of the other industrial countries.

The main reasons for their not-sobrilliant export performance are-

1 GERMANY'S FORMER MARKETS HAVE CHANGED SINCE 1933. A number of pre-war markets have been lost.

- (a) The Iron Curtain markets, mainly the Balkan countries.
- (b) The most important South American markets, Argentine and Brazil, which are nowadays prac-

tically closed for most consumer goods from Europe.

- (c) The remaining European markets, such as Scandinavia, Holland and Switzerland, which have since 1933 themselves become more and more industrialized and, therefore, take less and less of the German consumer goods.
- (d) The German special export drive to the United States, which started two years ago with tremendous hopes and expense, has not brought the results hoped for and is fizzling out.
- 2 GERMANY'S DAY-TO-DAY PRAC-TICAL APPROACH TO EXPORTING. Germany's export development is handicapped severely by the lack of experienced export men, having been cut off from the world since the early thirties.

I have found that, in consequence, most of the middle-sized and smaller German manufacturers try to tackle their overseas export by the same methods which have worked successfully when exporting to their "doorsteps" (Holland or Switzerland) by rail or by lorry.

Most firms insist on selling overseas their styles of central-European taste and their home trade qualities at the same prices and on the same conditions. They still insist, in the majority of cases, on payment by letter of credit, (a foremost German characteristic is suspicion), not realizing that this method of payment is now accepted only for products without competition.

They still think that "quality" meaning high price—is what the world wants, and generally they do not wish to accept the fact that four-fifths of the world contains cheap markets in hot climates, for which they are not ready yet to cater.

Because of the shortage of exporteducated staff they have great difficulties with foreign languages, foreign currencies and foreign weights and measures. Therefore in many cases they try to get away with offers in D marks and in German weights and measures. They dictate commission rates without accepting the idea that different markets command different rates.

Their main stumbling block, however, is their most complicated system of rebates and discounts which in some cases (I have seen them myself) mount up to 90 per cent of their prices! They explained to me that in this way they can manage with one price list for the whole world and for all currencies, "saving so much work in the office."

Many of them still look at exporting as something to be done in their spare time after having finished everything concerned with their booming home trade. They do not mind leaving letters from abroad unanswered for months, and when they do answer they have a great facility for discouraging their agents abroad by haughtiness and by being generally unco-operative. They do not yet know much about export documentation and c.i.f. offers and have, therefore, given their export rights mostly to German export houses in Hamburg and other ports.

These export houses naturally have had to rebuild their own export organizations from scratch during the last two or three years. They are not yet ready in many countries, and as go-betweens they often raise the price of a product out of reach of the cheaper markets. In addition, I have heard German manufacturers complaining bitterly again and again about losses incurred through bad debts overseas or through not having the right type of agent. And it seems that the West African sample hunters are looking on Germany as their happy hunting ground.

May I repeat that I found the forementioned facts to apply in very many cases, and, taking all into consideration, I dare to predict that the average British manufacturer of consumer goods will in future find somewhat less export competition from Germany. This is particularly so in the many smaller overseas territories of the British Commonwealth and, for example, Central America, which have been our markets for generations and which, if concentrated on now, will bring us good returns.





THE JOINT STOCK BANKS AND DISCOUNT HOUSES

How to Finance

THEN a businessman wants more capital-more than he can raise within his own family or among friends-the first place he generally thinks of going to seek it is his bank. The aim of this article is to discuss the circumstances under which he is likely to be successful in obtaining a bank loan. What sort of capital can he get, what are the limits within which the bank can help him, what will the loan cost him, and what are the conditions which he himself must fulfil in order to qualify for a loan?

Let us start with the first point-the sort of capital which can be obtained from a bank. It is often said-and it is broadly true-that one can get only working capital from a British bank. By contrast, in some other countriesnotably the United States. Germany and Australia-it is possible to obtain a bank loan for the purpose of buying fixed assets.

This difference, however, is not as significant as it sounds. For a businessman is unlikely to obtain a loan unless he has assets of his own worth more than the value of the loan-assets which he can pledge as security for the loan. As he is likely to need both fixed capital and working capital in his business, there is nothing to prevent him from using his own capital to buy fixed assets and using the bank's resources for working capital-to pay

Banking, as typified by Lombard Street, shown above, is based on mutual confidence

Your Business-I

By the EDITOR

This article is the first in a series designed especially to help leaders of smaller business firms to an understanding of the facilities available for financing their enterprises. We would not presume to tell the financial expert employed by a large company how to do his job, but in smaller firms there are many directors and managers whose chief success has been in production or selling and who also have to take finance in their stride. The series will also appeal to many technical executives in large firms who feel that they ought to prepare for future promotion by taking a greater interest in financial matters. Next month's article will discuss the rôle of industrial development and

finance companies in providing capital for the smaller firm.

wages, buy raw materials and give may be required to reduce his overdraft. credit to customers.

Of far greater significance to the businessman who borrows from a bank is the fact that the loan is generally repayable on demand. At least, that is the theory. In practice it is common for a bank loan to be granted for a specific, but short period, such as six months. And the bank may renew the loan at the end of that period. But the businessman never knows for certain whether he will get a renewal, and if he does it may be at a lower figure. In other words, he

The first and in some ways most important point to bear in mind about bank loans, therefore, is that they are a very temporary form of capital. The businessman who wants capital of a more permanent nature, and does not want the worry that he may be called upon to repay a bank loan, should look elsewhere. He may go to his bank to obtain temporary help while he is making other arrangements, but he should never regard his bank as a source of permanent overdraft facilities.

limits within which the bank can help. There are two factors to consider here -the bank's capacity and general willingness to make the loan, and the policy laid down by the Treasury in regard to bank advances. To understand the limits to bank lending capacity it is necessary to appreciate that the banks are trading mainly with other people's money—the money of their depositors. For example, it can be seen from the February statement of the 11 London clearing banks that aggregate deposits were then £6.237 million, whereas the combined paid-up capital and disclosed reserves belonging to the shareholders were £168 million, or 24 per cent of total deposits.

Money at Call

Most of the deposits held by the banks are repayable on demand, and the money deposited for a fixed term is in practice repayable on demand. less interest. Therefore the banks like to keep most of their funds in a form which can be quickly available. For example, the February statement shows that they held 8 per cent of their total funds in cash and balances at the Bank of England, and had 7 per cent invested at call or short notice in the City of London. They had 18 per cent invested in Treasury and other bills. Another 36 per cent was invested in Government bonds and other giltedged securities. Only the remaining 28 per cent had been advanced to the bank's customers.

This is not regarded by the banks as a high percentage, and in fact before the war they lent over 40 per cent of deposits in the form of advances to customers. They could lend more now, but they are much bigger financiers of the Government now than they were before the war. About two-thirds of bank deposits are made available to the Government in one form or another.

If the banks lent more to customers they would have relatively less in the form of cash and other liquid assets. The February statement shows that they had roughly 33 per cent of deposits in the form of liquid assets—cash or money at call or short notice, Treasury bills or commercial bills. This is also a high figure, and the banks could lend more to private customers before becoming unduly worried about their own position.

So long as the Government is wedded to a high employment policy, it is unlikely that the banks will need to restrict advances on the grounds that they are themselves short of cash.

More likely grounds are the insecurity of the borrowers or the industries in which they are engaged, or the policy of the Government.

Let us now consider Treasury policy on bank lending. The banks have been restricted in their lending policies since September, 1939, when the first Treasury directive was issued under emergency war powers. The banks were then required to bring about "the prompt restriction of all advances except those for armament, the export trade, including the winning of additional coal, and agriculture."

At the end of the war a White Paper on "Capital Issues Control—Memorandum of Guidance," Cmd. 6645, was tabled (May 31, 1945). This outlined Treasury policy regarding business finance. Later, in the Borrowing Control and Guarantees Act, 1946, the Treasury took power to make orders governing borrowing in excess of £10,000 within a period of 12 months, with the exception of borrowing from a bank in the ordinary course of a customer's business. In 1947 this limit was raised to £50,000.

The Treasury was anxious to control any bank borrowing which might be used for the expansion of a business in an unessential industry, but it did not want to interfere with the ordinary provision of capital for firms which were accustomed to borrowing in order to buy raw materials, pay wages, or give credit to their customers.

The Treasury memorandum which is still in force was issued by Mr. Butler soon after the present Government came into power on December 7, 1951. In this he said: "I regard it

as most important that the banks and accepting houses should continue to intensify their efforts to restrict credit to essential purposes and, in particular, to ensure the highest priority for our defence programme and for our ex-And he added: "I am also ports." asking that the banking facilities should not be given for the speculative buying or holding of securities, real properties or stocks of commodities: that the finance of hire purchase should be limited, and that notwithstanding the statutory exemption of borrowings made in the ordinary course of business, bank advances should not in general be made for capital expenditure."

Since the approach of a businessman to a bank manager for an overdraft is essentially a very private matter, it may be wondered how the Treasury—or rather the Bank of England acting on behalf of the Treasury, could supervise the carrying out of a general instruction which is sent down by the head offices of the banks to several thousand branches. Would it not be possible for a bank to make an advance outside the terms imposed by the Treasury?

The answer is that it is possible, but not at all probable. Banking is very much an industry which depends on goodwill and honest dealing, and the head offices of the big banks would be critical of any branch manager who attempted to step outside his instructions. They have every reason for wanting to work in harmony with the Government. Moreover, if one bank adhered to the terms of the directive and refused to make an advance to a customer, and if the customer then

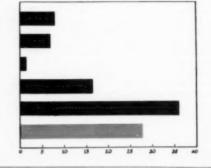
How the Banks Use Your Money

Less than one-third of the money deposited in banks today is advanced to customers. Nearly all the rest is made available to the Government in one form or another.

Cash and balances at the Bank of England Money at call and short notice Commercial bills Treasury bills

Investments

Advances



walked down the street and was given an advance for the same purpose by another bank, the first bank would have justifiable cause to complain.

The next point to be considered is how much a bank overdraft will cost a businessman in interest payments.

The general level of interest rates charged by the banks depends on the Bank Rate, or to give it a more explanatory title, the re-discount rate charged by the Bank of England. This is at present 3½ per cent, and its significance is that if a bank is short of cash it will call in its short loans to the discount houses and force the latter to sell some of the bills they hold to the Bank of England. The Bank will re-discount these bills at the Bank Rate.

The discount rate charged by the joint stock banks to the public is slightly above the Bank Rate in order that they may cover their day-to-day expenses of doing business, and the interest rates charged on bank overdrafts are slightly higher still. Whereas a commercial bill may be discounted today for 3½-4½ per cent, a bank overdraft is likely to cost 4-5½ per cent.

It is not possible to be precise about these figures, for the actual rate charged will depend on the credit-worthiness of the customer. However, the actual difference in the rates charged to a very worthy customer and the most risky of customers is not very great—no more than a couple of per cent. There comes a point where a bank will decide not to lend rather than raise the interest rate to cover a greater risk.

Discounting a Bill

If discount rates are lower than interest rates, when should a businessman raise money by having a bill discounted, and when through arranging a bank overdraft? If he sells goods to a customer who needs a few months in which to pay, he can draw up a bill which is endorsed by the customer, acknowledging that he is due to pay the full value of the goods in 90 days. The businessman can then take this bill to his bank and ask them to buy it from him at a discount, so that he gets the money, less the discount, immediately, while the bank waits to collect the full sum.

The businessman need not, however, go to his local bank to have his bills discounted. If he is likely to need discount facilities regularly it may pay him to establish connections with one of the discount houses of the City of London. Because these firms specialize in discounting bills, and because



A bank manager's power to grant advances without higher authority depends on the size of his branch and his record of experience

the market in which they operate is highly competitive, they are able to quote slightly lower discount rates than the joint stock banks. In effect, therefore, the businessman has a choice between the convenience of his local bank and its fractionally higher rates, and the lower rates of the London market, which can make for a considerable saving if bills are being discounted regularly.

There are 12 firms in the London Discount Market Association-firms which discount trade bills, to which are attached the shipping documents of the goods which are actually being traded in. In London there is also the Acceptance Houses Association, consisting of merchant banking firms which will, for a small commission, endorse a bill drawn up by a firm which they know to be reputable. The acceptance house thus undertakes to pay the full value of the bill if the drawer defaults. A well-known and reliable firm need not therefore be actually shipping goods in order to get a bill discounted. Such a firm can draw up a bill, have it endorsed by an acceptance house and then discounted, for the purpose of raising a general short-term loan, unconnected with any particular shipment of goods. It should, however, be noted that the general term of a bill is 90 days. A businessman who wants credit for a longer period should seek a bank overdraft.

The next point to consider is the conditions which a businessman must himself fulfil if he expects to obtain a bank overdraft. There are three aspects of this matter—the prospects of the industry in which the businessman is

engaged and the prospects of his own firm, the security which he can offer for his overdraft, and lastly a few words will be said about the actual mechanism of applying for a bank overdraft and how a businessman's application will be dealt with by the bank

A businessman who applies for a loan or who asks for the renewal of a loan already granted may receive a disappointing reply if the bank has reason to take a cautious view of the prospects of the industry in which he is engaged. Each bank has an intelligence staff which is continually studying conditions in British industry, from bank managers' reports and from outside sources of information. Also the bank boards are generally composed of men drawn from a wide background of industrial experience.

During the 1952 recession in the textile and other industries, some firms were pressed for reduction of their overdrafts or were not given the overdraft facilities they would have liked, because of the state of trade in their

industries.

The fact that this can and does happen is a warning to businessmen not to depend on obtaining an overdraft or on obtaining a renewal of an existing overdraft. When the prices of a firm's products and raw materials drop, a situation which formerly looked very healthy can change quickly into one in which cash is short, creditors are pressing for payment and debtors are tardy. If, just at this time, the bank, in the interest of its depositors, is not prepared to grant an overdraft or to renew an existing overdraft, the business-





Some of the banks make nearly all their decisions on advances at head office, while others have local boards meeting in provincial centres

man's outlook can be very grim.

Of even greater importance than the prospects of his industry are the prospects of the businessman's own firm. The bank manager will judge them partly by the state of the firm's balance sheet and its future plans, and partly by the character and drive of the businessman himself. The firm's prospects are important to a bank even when it is intended to take a mortgage on specific assets, for no mortgage can provide absolute security. The property which is mortgaged may depreciate in value or it may be maltreated. And in any case the legal problems associated with foreclosing on a mortgage are both expensive and timeconsuming-not to be relished by a

A considerable volume of bank lending is done without the businessman being required to deposit any specific security with the bank, and without any mortgage being taken on the property of the business. This is particularly so in the case of large and famous firms, but it also applies to smaller firms whose balance sheets and trading prospects are viewed favourably by the bank.

When a bank manager looks at a balance sheet, he is naturally concerned to reassure himself that the business is not over-trading—that it can produce the cash to meet commitments which are coming up ahead, that it has net liquid resources of its own after the current assets have been deducted from the current liabilities.

If, however, the bank does not take the loan if necessary. He may be a mortgage, it puts itself in no better required to deposit securities in his

position than any other creditor, should the business become bankrupt. The object of taking a mortgage is to put the bank ahead of other creditors, so that the mortgage must be repaid before there is any share-out to other creditors.

Two types of mortgage can be taken, a specific charge on certain assets of the business or a floating charge on the running assets. If a specific charge is taken, then the bank is in a position to take over and sell those specific assets, in order to reimburse itself, leaving the business to struggle along as it may. If a floating charge is taken, then the bank has no right to sell specific assets but can only obtain prior treatment in repayment by forcing the business into liquidation.

The security for an overdraft may be provided in the form of "collateral." This word has many meanings, but it is used here for security coming from outside the business itself. The businessman may deposit with the bank some bonds or shares or property deeds which are unconnected with the business. The bank may then dispose of these if the loan is not repaid. On the other hand, the collateral may be provided in the form of a guarantee by another person who has assets outside the business. The guarantor agrees to repay the bank loan if the businessman is unable to do so.

Before accepting such a guarantee as collateral security the bank must make enquiries as to whether the guarantor has sufficient assets to be able to repay the loan if necessary. He may be required to deposit securities in his

own bank, which holds them on the understanding that they are collateral for the loan. From the bank's point of view, collateral security is very much to be desired, for it is unlikely that the property which is pledged as collateral will run into the same misfortune as the overdraft.

If the security which is pledged or mortgaged in order to arrange a bank overdraft has a value of say £1,000, how large an overdraft will the bank provide? There is no short answer to this. It all depends on the nature of the security, the reputation of the firm and the type of business being handled. But even in favourable conditions the overdraft limit is unlikely to be more than two-thirds of the value of the pledged assets.

It now remains to consider the actual approach to a bank for an overdraft. Should the businessman deal with his local bank manager or is it better to go to a much bigger branch in a neighbouring city, or even to the head office of the bank? The answer to this is that he has nothing to gain by going higher, for the bank will naturally be influenced in its decision by what his local branch manager is able to report on his business prospects, the financial position of his firm and his local business reputation.

However, it is worth noting that the joint stock banks vary considerably in their administrative methods of dealing with an application for a loan. Some have a centralized system for approval of advances. The local branch manager has power to deal with small applications himself, for sums of say £50 or £100, although this naturally varies with the size of the branch and his own experience. If there is an application of very great urgency, he may also deal with it himself up to a limit of say £500-again varying with his experience and status in the bank. But he must, of course, refer his decision to head office immediately.

For all larger applications, and even for relatively small applications which are not urgent, the branch manager must send a report to head office in London. There the report is immediately passed to one of a number of departments which are experienced in dealing with applications from particular regions of the country, and from particular industries. These departments have access to a large volume of information, or bank intelligence, dealing with industrial prospects and recent

Management at Work

AUTOMATIC FACTORIES?

ACTING upon a suggestion made by Sir Thomas Merton, a director of Vickers Ltd., the National Physical Laboratory has been working on a new method for the manufacture of diffraction gratings. These gratings, intended primarily as components of spectroscopes for analysing radiation, are now being increasingly used for the precise measurement of length and the control of machine tools.

When two gratings are placed one upon the other with their rulings inclined at a small angle, dark lines or fringes are produced. These fringes run at right angles to the rulings and a "moiré" effect, similar to that of watered silk, results. If, however, one of the gratings remains still while the other is slowly moved towards the fringes, the fringes also move at a greatly increased rate and the number passing across the field of vision can be calculated by a photocell and electronic counter. Measurements of great speed and accuracy can be obtained. for when gratings ruled with 10,000 grooves per inch are moved in this way the fringe counter records the movement in ten-thousandths of an

In collaboration with Ferranti Ltd., the N.P.L. are now working out a further application of this method to the automatic control of machinery. This will make it possible for instructions recorded on tape to control intricate machine operations—a big step towards the truly "automatic" factory.

RECRUITING SALESMEN

WHEN a life insurance company wants to recruit a salesman, an average of 220 replies to Press advertisements must be "processed" in order to find one suitable applicant. This, at least, is the experience of the Manufacturers Life Insurance Company, as described in a recent address by their United Kingdom manager, Mr. C. F. Wood.

He told the Manchester branch of the Incorporated Sales Managers' Association that when the company's anonymous, but rather attractive advertisement is inserted in the Daily Telegraph they draw an average of 120 replies. From *The Times* they draw another 60. These two advertisements together are insufficient, on the average, to produce one satisfactory man.

Assuming that they advertise more widely and draw 220 applicants, they then send out personal questionnaire forms, which are completed and returned by only half the applicants. Of these 110, an average of 34 are selected for interview. Most of the 34 are seen only once and rejected, but a few of



C. F. WOOD

For one recruit, 220 applications

the more interesting ones are interviewed as many as half a dozen times, in the office, in their home environment—preferably with the applicant's wife—and in a social environment. Furthermore, the applicant's referees are interviewed personally.

In addition to the original personal questionnaire, the company uses a sixpage questionnaire in which a selected applicant has to indicate at greater length his outlook and personal characteristics. From the two questionnaires an aptitude index is compiled, by a graded system of marking. There are five grades, from A down to E, but experience has shown that the chance of a C man being successful is remote, and in recent years very few B men have been taken. Figures based on recruits during the period 1947-52 have shown that more than twice as many A men become highly successful, as

compared with B men. At the other extreme, about six times as many B men prove disappointing, as compared with A men.

All this trouble in finding the right recruits seems to be worth while, for the company claims to be growing faster than any other life insurance company in Britain.

LEARNING TO TALK

VALUE of the discussion group technique for training foremen is becoming widely recognized. In many respects, it has distinct advantages over more formal methods — particularly when it brings together representatives of different firms. But these advantages are lost if the technique is not applied properly.

For this reason, a new 15-minute film called "Subject for Discussion" is timely. Sponsored by A. G. B. Owen, head of the Owen organization, it demonstrates how a discussion group should conduct its business. Subject of their discussion: foremen training.

The group is made up of four "typical" members, ranging from the dogmatic "it-won't-work" type to the strong, silent type who has good ideas if he can be encouraged to express them. One point which is carefully established is the function of the discussion leader: not to act as formal chairman or as lecturer, but to draw out the others' opinions.

Made without a script, the film has an air of authenticity often missing from rehearsed productions. The "cast" represents a co-operative effort: the personnel manager of Bayliss, Jones and Bayliss, the welfare officer of Round Oak Steel Works, the area training officer of Stewart and Lloyds, and a representative of the Iron and Steel Federation. Rubery Owen's training officer introduces the discussion and takes the part of discussion leader.

"Subject for Discussion" is to be used as a training film within the Owen organization. While it could hardly supplant "live" demonstrations of discussion group technique, it should have particular advantages to the smaller associated companies. Copies are also to be made available for loan to other firms.

KEEPING AHEAD

THREE recent events illustrate the novelty of outlook essential in modern industry.

In Canada, a helicopter was used to

take depth-soundings in the Long Sault Rapids on the St. Lawrence Seaway project. The machine, a Hiller "360," is owned by Kenting Aviation Ltd., a member of the Hunting group.

In London, the Application Centre of Philips Electrical Ltd. has cooperated with Ariel Motors Ltd. in devising a new system for the quantity production of high grade motor cycle frames. Philips engineers helped to train members of Ariel Motors staff in electric arc welding, using an electrode specially designed for this new process which eliminates much of the machining previously required.

A universal joint for increasing production from any type of manually or power operated riveter, welder or dimpling equipment has been developed for internal use by Short Brothers and Harland Ltd., of Belfast. The new instrument has been found to reduce time taken on the riveting or welding of curved surfaces by as much as fifty per cent.

ALUMINIUM SKYSCRAPER

HE construction of a new American THE construction of a field sufficient skyscraper is hardly of sufficient importance to warrant mention, except that the 30-storey building in Pittsburgh, shown here, is largely made of aluminium. Planned as the new head office of the Aluminium Company of America (Alcoa), its exceptionally light structural members permit smaller and cheaper foundations than have ever been used before in a building of this size.

Columns and beams are fireproofed by lightweight foam concrete, which is also used for floor slabs. Due to the absence of piping or radiators along the outside walls, the rentable floor

space is substantially increased. Airconditioning throughout is by means of radiant heating and cooling panels in the ceiling. Approximately 15,000 sq. ft. of floor area are thus freed for other purposes.

Perforated aluminium sheet panels. 0.040in, thick, are used for the ceilings. Above them, 4in, aluminium tubing grids are installed, through which hot or cool water is circulated. Air fans situated in the sub-basement, on the fourteenth floor and in the machinery penthouse on top of the building provide air for ventilation and extra cooling, via local mixing units in a small fan room on each floor.

As the skyscraper's exterior is faced with large aluminium sheet panels. which do not require painting or caulking, no exterior maintenance costs are expected.

DO THEY CIRCULATE?

IRCULATING a plethora of essential reading matter is one of the problems of modern business. Analysis of 320 replies to a questionnaire sent to Aslib members reveals that about half the members concerned circulate more than 100 copies of periodicals. One circulates 1,600 conies

These figures were given at a recent

circulation are: (1) to leave each person to pass the copy to the next person on the circulation list when he chooses: (2) to ask for copies to be returned to

the library for re-direction after each recipient has seen them.

First method places less strain on library staff but is attended by much uncertainty and delay. Slightly more than half the members who replied to the questionnaire favour the "controlled" method

Publications Received

ACCOUNTS FOR MANAGEMENT (British Institute of Management) 5s. Specially written for the heads of small and medium scale business firms.

BRITAIN—AN OFFICIAL HANDBOOK (H.M.S.O.) 10s. This 290-page text, pre-viously only available overseas, is now on sale in Britain

DELEGATION OF AUTHORITY by RAYMOND (Industrial Administration Group, College of Technology, Birmingham) 2s. A lecture given to graduate students by the managing director of Chance Brothers.

FILMS FOR INDUSTRY (Central Office of Information) Is. 6d. Catalogue of 300 16mm films on industrial productivity and training, made available through the United training, made available through the United States Government, together with over 50 British industrial films and other films from Commonwealth and European countries.

MODERN GERMAN COMMERCIAL CORRESPONDENCE by Stella M. LANE (Pitman) 5s. A useful guide for those who already understand elementary German.

POST OFFICE: BACKGROUND LOCAL ADMINISTRATION—II. STAFF REVISIONS (Post Office Joint Production Council—Non-Engineering). Explains how the Post Office ascertains its staff requirements and how adjustments are made to meet changes in the nature, volume and incidence

Aslib meeting by C. W. Hanson, information officer of the British Scientific Instrument Research Association.
His analysis also shows that the average
number of periodicals circulated to
each individual or group is ten.
The main alternative methods of fluence on commercial survey practice.

SECURITIES FOR BANKERS' ADVAN-CES by J. MILNES HOLDEN (Pitman) 25s, sets out both the law and banking practice in regard to securities pledged against bank

STATISTICS FOR THE COST ACCOUNTANT by J. A. REFCE (Gee and Co.) 5s. A brief, elementary text, with a useful appendix illustrating methods of statistical calculation

STOCK MARKET ECONOMICS by M. RIX (Pitman) 25s. A factual account of the workings of the Stock Exchange, into which is woven a thought-provoking discussion of the value of the Exchange to the nation.

THE ECONOMICS OF RESALE PRICE MAINTENANCE by B. S. YAMEY (Pitman) 25s. Of interest to members of trade asso-25s. Of interest to members of tractions, as well as to students of economic ciations, as well as to students of economic conditions before describes market conditions before price maintenance, explains the nature of current price maintenance and forecasts changes price maintenance and foreca likely to occur if it is abolished.

THE TRUTH ABOUT ADVERTISING by ROBERT BRANDON (Chapman and Hall) 8s. 6d. A forceful statement of the case for advertising, its economic justification to the businessman and its ethics. The author is director of a London advertising agency.

UNDERSTANDING OTHER PEOPLE by JOHN MUNRO FRASER (Pitman) 3s. A short treatise for foremen, on how to handle their men. This is No. 2 in the "Supervisors' Guidee" series. Guides" series.



LIGHTWEIGHT: New head office of Alcoa makes extensive structural use of aluminium



General view of the operating floor. On the left, an operator loads the input unit with a pack of punched cards, Group on right examine the twin tape inputs,

Now working at the Cadby Hall beadquarters of J. Lyons & Co.

Ltd, is Britain's first fully automatic electronic calculator designed

for commercial use. It allows routine clerical jobs to be done in

a fraction of the time previously taken and promises to have far-

reaching effects on the management of the business. Eventually

small as well as large firms will reap the benefit of this development.

This Machine Foreshadows a Revolution in Management

By FRANK G. CASEY

UMBERS of electronic calculators have been working on mathematical, statistical and scientific problems for some time in this country and in the United States. There has been a great deal of conjecture about the implications of these devices for businesses large and small. Now, however, there is concrete evidence to go on, for the first fully automatic electronic calculator designed specifically for commercial use in Britain has started working at the Cadby Hall headquarters of J. Lyons & Co. Ltd. For the past few weeks the payroll for 1,700 bakery workers has been worked out automatically by the machine (named Leo, for Lyons' Electronic Office) in a fraction of the time taken before, even by a highly mechanized accounting system.

This is just one example of the clerical jobs that Leo is doing; others are ledger-keeping, stores control, invoicing and cost accounting. In fact all types of clerical work that involve repetitive calculation are within its scope. Eventually it is estimated that the calculator will be doing the work of between 200 and 400 clerks and tackling jobs which would have been quite impracticable by more orthodox methods.

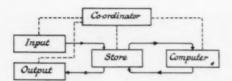
Leo has been designed and built by Lyons themselves—an extraordinary achievement for a catering and confectionery organization. Work was started over four years ago and a brief report on the project appeared in Business as long ago as July, 1952. One of the reasons that Lyons tackled the job themselves was because they wanted to ensure that the machine could be fitted to their systems. This might not have been possible with a machine built by an outside manufacturer.

The actual computing part of Leo is similar to the first British electronic calculator, designed and built at Cambridge University. Chief problems confronting J. Lyons & Co. Ltd. were the development of mechanisms for feeding information to the calculator, and recording the results fast enough to enable advantage to be taken of the speed of the calculator. These problems are peculiar to the commercial office where a large number of fairly simple calculations need to be

done, as opposed to the smaller number of highly complex calculations necessary in mathematical and scientific

An outline of what the machine can do and how it is operated can be given without delving into the mysteries of electronics.

Like all other calculators (see diagram, page 56), Leo has input, storage, computing and output units. In a desk calculator these units are represented by the keys, the toothed wheels that do the storing and computing, and the answer dials or tally-roll printer. The operator enters amounts on the keyboard, gives the machine its "orders" by operating the appropriate controls (add, subtract, total, etc.) and reads off the results. Leo, on the other hand, is given its orders by a co-



Schematic diagram showing the basic units of Leo and flow of data between them

ordinating unit which calls data from the input stage, passes them into the store where they remain until called out and passed to the computer which is simultaneously instructed what to do with them. When the calculation has been done and checked, the co-ordinator causes the results to be returned to the store and then recorded by the output mechanism and to be accumulated in sub-totals, grand totals, etc.

It is important to realize that the co-ordinator can give orders to the machine only according to a pre-arranged programme. The programme for a particular job must cover all possible eventualities and combinations of circumstances so that the co-ordinator knows how to handle every figure with which it is confronted.

An example of a programme of orders for a very simple job like finding the average weight of two parcels is as follows:

- 1—Take weights of parcels into store
- 2—Take two weights from store and pass to computer
- 3-Add them together
- 4-Divide answer by two
- 5-Print the result

For a complicated job like the payroll, a programme with over 1,200 orders is necessary.

Working out programmes is a lengthy process calling for considerable skill. Lyons have been able to train some of their existing office staff to do this new kind of work. Although programme planning takes a long time, it represents a capital job which need not be repeated until and unless there is some change in procedure. Lyons consider programming to be equivalent to the preparation of a procedure manual; a notable difference, however, is that they can be completely sure that the programme is always carried out exactly as laid down. When the programme has been worked out and tested, a pack of punched cards is prepared containing all the orders in

Data for processing is fed into Leo in two ways—either in punched cards, or perforated into telegraphic tape.

Constant information is kept in the cards, whilst figures that vary from week to week are put into the tapes. This has two advantages; tape is cheaper to prepare, although it cannot be used repeatedly, as can cards, and the alternative inputs (which can be operated simultaneously) allow more rapid feeding of data. In actual practice there are at present two inputs for tape and one for punched cards.

Recording Results

Results are also recorded in two ways. Either they are printed by a tabulator on continuous stationery or they are punched directly into cards. What happens to a particular result depends on what it is needed for. Careful planning and balancing of input, computing and output mechanisms have made it possible to keep the machine loaded and working continuously. While the calculator is engaged on one calculation the input mechanism can be reading the data for the next one and the output mechanism can be recording the results of the previous one

Once programmes have been established, procedure on a routine clerical job is simple, as will be made clear by an explanation of what happens when the weekly payroll (already referred to) is being prepared. Three types of data are involved in this job. 1 Fixed (e.g. wage rate, tax code). 2 Brought forward from last week (e.g. total pay to date, total tax paid). 3 Applying to current week only (e.g. hours worked, bonus earned, overtime).

Information under the first two headings is punched into a card for each worker. The constant part is copied without change from week to week by the machine. As it does the work on one week's payroll, it punches the accumulated tax, the pay totals and other information into the same card, so that these punched cards can act as a basis for computing the next week's pay. Data applying only to the current week are fed into the electronic calculator in the form of holes punched in a telegraphic paper tape. The tape is

prepared from time sheets made out in the works offices. Hours worked and other figures are entered against the names of workers, arranged in numerical order by key number.

A punch operator translates this information into a series of holes in the tape by working a keyboard. takes about a minute to deal with 20 workers. A second operator checks the first by doing the work again. She operates a special machine which perforates another tane, and simultaneously compares the two. If they are not identical, the keyboard locks and cannot be cleared until a certain correcting routine is followed. Corrections are printed on a third tape and scrutineer checks that corrections have been made correctly by reference to this tape record.

When the data-bearing tape has been checked, work can begin on the payroll. The tape, the programme pack of punched cards, the cards bearing the constant information and that carried forward from the previous week, and programme plug boards for the punched card input and output units are placed on a special trolley and wheeled into the computing room. The plugboards are fitted and the

tionery (which is pinwheel-fed for accuracy of registration) is loaded on the tabulator.

Next step is to feed the programme of orders into the calculator store. The programme cards include instruc-

appropriately printed continuous sta-

ADVANTAGES

- Operates at speeds unattainable by mechanical means.
- Releases labour from routine figure drudgery to do more constructive work.
- Makes more information available to management, up-to-date enough to be useful.
- Allows analyses and totals to be done on a scale impossible with other means.
- 5. Forces management to think things out clearly from first principles.
- 6. Creates the time to allow statistics and data to be used effectively.





Left: The cabinets which house the calculating unit and the co-ordinating unit, with the control panel in the background. Right: The tabulator; results are being printed on continuous roll stationery

tions as to which register in the store the information they carry is to be placed, and a check total which automatically proves that the programme of orders has been fed in accurately. When the data cards have been placed in the hopper of the punched card feed unit and the tape loaded into the scanner, the machine takes over. Thereafter the entire payroll is worked out automatically, the pay-slips are printed in duplicate (one copy goes in the pay packet and the other is filed) and a fresh set of cards punched with the information to be carried forward for the following week. In addition a whole series of figures and totals for departmental analysis and cross-checks are stored and printed off at the end of the job, throwing out a series of zero balances if all has been performed correctly.

Capacity Rented

Time taken to work out each employee's pay (including preparation of data) is in the region of 1½ seconds. It took eight minutes per man using orthodox office machines. Moreover, the payroll is prepared and checked completely automatically once the machine has been set up and supplied with the necessary orders and information.

At present Lyons are not using the full capacity of Leo on their own work. They do not want to transfer too many eggs into this one basket in case of some disaster, such as a fire. They

are at present building duplicate units which can replace faulty parts in a short while, and work has started on designing a second calculator which can take over from Leo in an emergency. The second machine will cost much less than the £150,000 spent on the first one, as much of this sum represents expenditure on original research which need not be repeated.

Ordinary breakdowns (which do. of course, occur) seldom have the effect of paralyzing the calculator. The whole machine is unitized and is constructed so that faults can be localized very quickly indeed, and a replacement unit fitted at once. An ingenious system of warning devices helps to pinpoint failures, and the tests which the engineers have devised allow weaknesses to be detected and corrected before breakdowns can occur. The net result is that failures are few, and when they do occur they rarely immobilize the calculator for more than a few minutes

For the present, Leo's spare capacity is being hired out by the hour to other organizations for scientific work, and this arrangement will probably continue even when the second calculator is completed. This work provides a convenient "buffer," in the event of breakdown, for the more precisely timed commercial work. It is possible that small firms which cannot afford their own calculator will also be able to take advantage of the potentialities of these remarkable machines in this way.

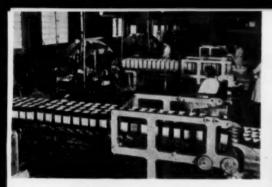
Lyons emphasize that they are only beginning to explore the possibilities that Leo opens up, but they already feel that it will have a profound effect on the management of the business. Figures of sales, stock and production can be kept right up-to-date, and all kinds of breakdowns and analyses which were impracticable before because of the amount of time and labour involved in their preparation, will become available.

Clear 'Briefing'

The calculator also represents a great challenge to management because it forces everyone to think out quite clearly exactly what is wanted and in which direction they wish to steer. The machine can act only upon the instructions it receives and cannot use initiative or make decisions, as a subordinate executive can.

Finally, it should be said that Lyons do not forsee that the machine will make anyone redundant—either junior executives or clerical workers. Rather do they visualize everyone moving up one stage. People previously engaged in the drudgery of preparing figures will now be employed in using them—a far more interesting and (from the company's point of view) a far more profitable occupation. Management will be provided with a new wealth of useful information—not only information which has never before been available, but information which is useful only if it is provided quickly.

Such is the promise of the electronic calculator, and its benefits will in due course be available not only to large firms but also, through the renting of capacity, to medium and small firms.



BEFORE

Satona Ltd., of Leeds, a subsidiary of John Waddington Ltd., originally made only one product: a waxed paper milk carton. From this has developed the manufacture of similar containers for an extensive range of foodstuffs, liquids and other commodities. To enable an impressive

AFTER



One Conveyer Co-ordinates

output to be handled efficiently in the same premises, the layout of the factory has been completely reorganized. Originally, each forming and waxing machine had its own short conveyer belt, at the end of which a girl packed the cartons into outers. Main disadvantages were: (1) Drying time was inadequate for heavily-waxed containers.

(2) Transporting outers to and from the packing stations created difficulties. These have been overcome by placing batteries of machines on both sides of a 184-ft. conveyer running almost the whole length of the building and carrying 12 separate lines of cartons to a co-ordinated inspection, packing and dispatch bay.

- * INSPECTION
- * PACKAGING
- * DISPATCH





After being printed, diecut and side-sealed, the "blanks" are fed into machines which set them up, seal the bases and immerse them in a wax-bath. Pre-cooled by a blast of filtered air as they leave the machines, the cartons are discharged on to the main conveyer, where metal rails guide them into lines. Those which need the longest drying time are produced at the top end of the conveyer.

2 To enable the cartons from all machines to be kept in separate lines, the two additional belts treble the width of the conveyer about 40ft. from the start. Cartons are neither jostled nor handled while they are wet, and the shortest distance that any of them travel before being packed is 25ft. Compared with the old layout, "spoils" are down by 2½ per cent.



5 Handling is reduced to the minimum. As soon as the outers are full, they are removed from the stands, sealed with gumstrip and stacked within a short distance of the dispatch chute and lift. Export orders are crated. Satona cartons are sent to many parts of the world where it is uneconomic for them to be made locally under licence.

BUSINESS Picture Story



3 Supervision and collection are much easier with the packers grouped together. As each girl packs the whole output of one machine, up to 12 different types of carton can be produced and handled simultaneously. The standard design—square base and slight taper—allows cartons to nest together; a 14½in. by 11½in. by 31in. outer takes 500 "pints". Metal stands hold the outers at a convenient angle.

A All products must attain a high standard.
Imperfect cartons are thrown into a beltoperated reject trough above the main conveyer.
This carries them to a central inspection point.
The packers' work is not interrupted, nor is the
floor-space cluttered by individual "spoils" bins.



How to Conduct a Periodic Check

By A. GODFREY CRUFT, F.C.LS., F.L.LA.

A busy executive can easily overlook the activities of one or two departments of his firm, and a busy departmental head can easily overlook one or two aspects of his own work. The system described here is being used by the managements of small and medium-sized firms to ensure that no important activity is overlooked or outdated routine retained.

experience. I have been struck by the lack of method which often surrounds the chief executive. Fundamental and elementary lessons of organization, method and personal efficiency have not been learned and it is often very disconcerting to meet a man at the helm of a business, full of energy, prolific of ideas and even abreast of the technical practices in his trade, who is nevertheless floundering about like a lost sheep because he seems to be completely incapable of exercising simple control over the dayto-day routine of his firm.

It is, however, easy to devise a method which can remove all uncertainty and drudgery, which can keep the manager informed of what he wants to know at the right time and in the right place, and-what is more important-can ensure without worry or sleepless nights that nothing is forgotten or left unchecked.

My experience has clearly demonstrated the need to make a periodic check of every part of an undertaking. to trust everybody but to leave nobody

N a long and varied management about having a memory. Every manager should so arrange matters that everything which must be remembered is noted and recorded in such a way that action in regard to it does not depend upon fallible human memory.

> So far as the financial position is concerned, the managing director is generally assisted and guided by the external independent auditors, who are able to relieve him of much work and anxiety in this field. But in matters of general management, on the technical and commercial sides, with regard to complex problems of organization and method, manufacture and distribution, he has no similar annual survey, nor the help of any impartial experts at his elbow. In most cases, he stands alone and is forced to rely entirely upon the capabilities of his assistants. This is surely unreasonable. He cannot possibly be cognizant of all the minor details all the time, and therefore he needs some kind of periodic audit or examination of the whole management set-up.

A management audit of the kind envisaged would cover details with unchecked, and above all to forget which the managing director cannot

hope to cope in the course of his ordinary routine. If a systematic survev be undertaken regularly, many elements of doubt can be removed, and both policy formulation and actual operation can rest upon a basis of fact. Guesswork can be eliminated and management, from its greater knowledge of conditions in all fields within the organization, can exercise more effective control.

It is proposed first of all to describe a typical external management audit of the type now being conducted by some consultants in Britain, but more commonly in the United States. Quite obviously there can be no set plan for conducting such a survey. The first task is, however, to obtain, if they exist, or to prepare if they do not, charts showing the alleged present organization structure. Also it is necessary to obtain a detailed personnel chart, with all delegation and division of duties clearly enumerated.

Past Record

From a study of past records and from information obtained at interviews with appropriate personnel, a history of the business can be prepared, trends and changes can be noted and analysed. This information, which must be written up with the human factor constantly in mind, forms the basis of the first section of the management audit report, dealing with past

The same kind of study is then made of the present position, in order to compare the achievements of the business with the best contemporary practice and productivity. In this case, particular attention must be given to comparative costs, bottle-necks, waste and duplication, work-study in all aspects, simplification, standardization and production control. All main divisions, such as production, distribution, development, accounts and finance, legal and secretarial, personnel and industrial relations and general management, are analysed. Again, account must be taken of the personalities and traditions connected with the organization.

Moreover, it must be made clear to all concerned, at the outset, that the examination is not for the purpose of apportioning blame or finding fault, but in order to find ways and means of closer co-operation, to eliminate waste and improve results for the future benefit of everybody in the business.

The third division of the report is concerned with a review of the state of trade, and alternative changes and possibilities that lie ahead of the firm. Generally included here are suggestions for immediate action and alternatives for long-term development. The financial and personnel aspects of each alternative must be fully set out and explained.

Recommendations

In the final division of the report—conclusions and recommendations—facts are summarized and the various alternatives clearly set out for consideration by management. This section must be made as concise as possible, details being covered by cross-reference to the data contained in the general body of the report.

Apart from the main recommendations for the development of the business, an attempt must always be made:

- 1—to advise action which can be taken at once to improve methods, at low cost, in order to bring about immediate reduction of operational and control costs.
- 2—to devise simple methods to enable management to conduct a routine management audit in the future, without the need for assistance from an outside consultant.
- 3—to make suggestions for training all supervisors in all departments in principles of work-study and control, bearing in mind the psychological effects of these proposals.

It must be emphasized, however, that the report is a confidential document submitted privately to the management. There is no compulsion about it or about any part of it. The

investigator must make no changes within the firm unless authorized and requested to do so, and must not express any opinions to the staff. He should merely set out the facts and submit his advice and recommendations, based upon those facts. His advice may be accepted and acted upon by the management, or it may be rejected in whole or in part.

Internal Audit

The report can be most effective if, as recommended in item 2 above, it becomes the basis for a regular system of internal management audits carried out by the managing director himself.

The external management audit report should be followed by a regular internal survey if the best results are to follow. The two audits are bound together in much the same way as the

internal accounts audit dovetails in with the work of the outside company auditors

The key to the internal audit is the preparation of a master card and a number of section cards to embrace all the functions and departments considered in the external report, together with other vital matters which arise from time to time. The purpose is to ensure that no department of the organization can possibly be neglected in the future, without the chief executive being aware of the fact.

The master control card contains, in the first vertical column, a list of all the main divisions of the business, and against each item a number of columns for the insertion of dates.

A section card is prepared for each main division, headed with the name of the division, the card number, and the period considered wise between

Division	Card No.	Last	5	iurvey Dates	
Accounts Control	1	29/1/53			
Branches	2	5/10/53	4/1/64		
Control	3	1/4/53	16/2/54	111	
Despatch	4	40/53			
ixpense Control	5	1/9/53			
Inwards Goods	6	3/10/63			
Maint enance	7	10/8/50			
ferchandise	1	1/10/13	7/4		MERCHANDISE (S Month)
Personnel	9	4/4/63	19/1/64	Section	(5 Mosth) Card 8
Publicity	10	29/9/0		Routine System	Survey Dates
Sales & Service	11	26/03		Purelmone	1//
				Small Order Book	15/5/11/11/11
				large Order Book	
				Special Order Book	
				Stockrooms	
			Н	Mrking orr	
				Stock Turn	
				Mirk Downs	
				mrk Up	2211111
			-	Old Stook	
				to les Incentive	
gure 1 (above		pical	-	Disposa 1	
ister control c			1	Itosk Letter	
gure 2 (right). e section card:		e of	-		
section cara:	8				7 7
			8	Igmture	Comic
					200
			1		9 9 1
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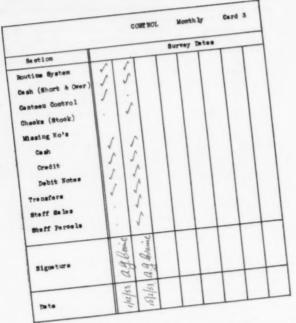


Figure 3: Another section card employed in the system.

Items which received attention have been ticked

each revision. The first vertical column contains a list of all the important matters connected with the section, and the remainder of the card consists of columns for audit ticks to indicate attention. At the bottom of each column is a space for signature and date.

The purpose of these cards is to make certain that, however busy management may be, no part of the business can be neglected or remain unchecked for long. The cards are placed in the appropriate sections of the managing director's follow-up file, spread over the year, and each one is brought forward on to his desk when it comes up for consideration on the due date, as noted at the top.

On each occasion when a card is brought forward, all the data included on it are considered, procedures are checked and where necessary revision made. The managing director places a tick against the items considered, and adds his signature and the date in the appropriate columns. He also puts the date against the item on the master card and files the section card under the date it is required to come up on the next occasion.

Such a simple control method, conscientiously used, enables him to keep

in complete touch with every development in every department of his business, revising and simplifying where necessary. Nothing can remain unchecked for long, because the blank spaces on the cards remind the chief executive of his neglect.

This method is followed by many large firms, but it is also possible for smaller businesses with relatively few clerical staff to use this method to exercise full control over all operations. No business is too small for proper control, and the managing director will

generally find that, with practice in the use of his control cards and the full use of his follow-up system, his own effectiveness can be greatly increased.

It will be appreciated that the selection of items for inclusion on the control cards will differ with every concern. The example given here must therefore be taken merely as an indication of method—the specific items to be controlled should be carefully selected in each case, and the construction and exact use of the cards decided by the chief executive.

Figure 1 shows a typical master card and Figures 2 and 3 are typical section cards. The "Merchandise" card No. 8 (Figure 2) came up for attention on February 15, and the "Control" card No. 3 (Figure 3) came up on February 16. All items which received attention on these dates have been ticked.

In every case the managing director checks over the "Routine System" of the department concerned, as laid down, to ensure that it is adequate and to make sure that procedures are not continued after the purposes for which they were designed have disappeared.

It will be noticed that some of the items on the section cards are not ticked. This means that the managing director did not consider it necessary to check these items when the card came forward. It is, of course, entirely up to him, but when the card comes up on the next occasion it will be quite clear to him what was done and what was omitted on the previous audit.

In larger firms, much of this control will be covered automatically by the internal control department, in which case the managing director's control cards will deal with unorthodox and unusual checks which are not generally a part of routine. The system is flexible and can be moulded to suit every type of business and the personal whims of the most exacting chief executive.

A SCHEDULE FOR MANAGEMENT AUDITS

- I-Arrange for an outside professional firm to do the first audit.
- 2—This audit should include a survey of the past history of the firm, its present position, the state of trade, and the auditor's conclusions and recommendations.
- 3—In his report, the management auditor will compare the achievements and management techniques of the firm with those of others.
- 4—After the report has been considered by the board, and appropriate action taken, it should be used by the chief executive as the basis for periodic internal checks on management.
- 5—By using a simple set of forms, the chief executive can ensure that periodic checks are made of all departments, and that out-of-date routines are abolished.

World-Wide Service With Sales

The slogan "Service with Sales" is interpreted in the widest possible sense by the Kelvin Hughes organization, makers of precision instruments for marine work, aviation and industry. In addition to providing world-wide facilities for the normal servicing of equipment and technical training for customers' personnel, the company also undertake hydrographic surveys to contract by their own specialist teams.



Kelvin and Hughes' representative with Mexican Government officials and the aircraft placed at his disposal by the Minister of Marine

THE servicing of its products is so important to the Kelvin Hughes organization that it has been necessary to establish a network of service depots in all parts of the world and to bring overseas engineers to Britain for training in the maintenance and use of specialized equipment.

The group has three factories in the United Kingdom and exports some two-thirds of the total output. In one typical week, the Barkingside factory alone shipped 107 consignments to 26 countries situated in every continent. Sales and service are handled by three separate but closely-linked subsidiary companies.

One company specializes in the marine side of the business, which covers a very wide range of navigational instruments, together with radar, echo-sounding equipment and stress finders for use in loading ships. It also provides shipowners and ships officers with a highly efficient chart correction service, undertakes the adjustment and repair of navigational instruments, and carries out hydrographic surveys.

The parent company also produces many types of navigational and flight instruments for the aircraft industry, which are sold and serviced through a second subsidiary. The third sales company is concerned with industrial instruments such as ultrasonic flaw detectors, high-speed pen recorders, electronic temperature controllers, and boiler-house instruments.

Such is the importance they attach to service that Kelvin and Hughes will

not introduce a single piece of equipment into a country unless they are satisfied that the customer knows how to make the best use of it and that facilities are available for keeping it in perfect order. Since the group concentrates on the production of delicate and often very complex precision instruments, its service engineers must be highly trained.

Moreover, Kelvin and Hughes are continually breaking new ground within their special field. They pioneered the application of echo sounding to the requirements of the fishing and whaling industries, and are associated with the development of marine radar.

Their technical representatives must

By A. G. THOMSON

be kept up to date on new equipment and techniques if they are to give service of the desired standard to the group's overseas customers. It is, therefore, a basic part of the group's export policy to bring service engineers home for special training, no matter how highly qualified they may be in other respects. These experts come from all parts of the globe and speak such a variety of languages that the organization's training schools frequently resemble the Tower of Babel.

Courses in radar are available at a training school established in Southend-on-Sea by Kelvin and Hughes (Marine) Ltd. This school was originally situated at the end of the

pier, where conditions were practically identical with those on board ship. It was subsequently transferred to the Palace Hotel, where three full-time instructors and three radar sets are available. Both technical and non-technical instruction are given free of charge not only to the company's representatives, but also to officers of ships about to be fitted or already fitted with Kelvin and Hughes equipment. Deck officers are not only taught how to operate the equipment, but also simple fault-finding.

Part of the main offices at the group's Barkingside factory is occupied by the Echo Sounding Equipment Department. Ships' officers, agents, and visiting overseas engineers are encouraged to make free use of this facility, in order to brush up their technical knowledge and keep abreast of the latest developments.

A spacious room, provided with wall charts and service literature, is fitted up with several complete echo-sounding equipments. Each is on an individual rack assembly and can be made fully operational with the aid of air oscillators mounted high up under the roof. These arrangements also enable demonstrations of current models to be given for the benefit of prospective customers. Similar facilities have been provided for instruction in the use of the company's echo whale-finding equipment.

As part of the firm's policy of





building up exports and service side by side, agencies have been established in virtually every country outside the "iron curtain" and a very large proportion of them are staffed by service engineers who have passed through the company's training schools. The number of radar and echo-sounder depots overseas is approaching two hundred, and nearly fifty countries are covered.

Included on the list are 26 depots in the United States, over 20 in Spain, 27 in Norway and six in Iceland. Among the countries where one or more service stations have been established are such remote territories as the Faroe Islands, Fiji Islands, Greenland, Indonesia, Italian East Africa and New Guinea. An engineer is stationed permanently in the Antarctic to service radar and echo whale-finder equipment for the whaling industry.

Should a vessel find its way into a port where there is no Kelvin and Hughes agent, prompt service will still be forthcoming if urgently required. In one emergency, engineers were flown to a small, remote port in North Africa.

The company is endeavouring to consolidate its existing service stations by increasing the availability of spare parts and, if possible, spare sets. Instead of being obliged to locate the fault on board the ship, then take parts of the unit ashore and carry out repairs against time, it is desirable that the service engineer should be

Kelvin Hughes team aboard a sternwheeler during their Zambesi survey able to exchange the defective part or set for a new one and repair the former at his leisure. This necessitates the stocking of a very large number of spare parts, and, due to the heavy demand for new installations, this ideal can be achieved only gradually.

In some foreign countries, service facilities are hampered by the high import duties on spare parts. In the United States, a duty of 66\(^2_3\) per cent is payable even if the parts are despatched to a British ship in an American port. In most countries, however, consignments sent to a ship or intended for spares can remain in bond; alternatively, the amount of the duty is refunded when the ship sails.

The overseas agencies are kept on their toes by personal visits from senior executives, who also keep in close personal contact with overseas customers to ensure that they are satisfied. One executive has just returned from the Far East and has visited Rangoon, Singapore, Thailand and Burma.

Two years ago, Mexico was toured by another representative who visited ports on both the east and west coasts.

A destroyer and a Catalina aircraft were made available by the Mexican Navy for parts of this trip.

Officials of the Navy and of the Fisheries Department accompanied the party and were shown the value of echo-sounding equipment to fishing boats—preventing the loss of costly nets on unfavourable fishing areas, and assisting the establishment of new areas favourable to fishing. A number of orders for the company's equipment resulted from this expedition. The same representative has since been to Japan. India and Pakistan.

Closely linked with the export drive is the work of the Hydrographic Survey Section, which undertakes surveys to contract in all parts of the world. Among the clients are port and harbour authorities who require surveys for navigation, dredging or improvement purposes. Civil engineers also need them in connection with port development and improvement. hydro-electric schemes, bridge building and coast erosion problems. Oil companies ask for surveys of their existing ports and approaches or of the sites of proposed new ports. Contracts are also received from Government authorities and shipping companies

Survey Teams

The work of the survey teams includes sounding, tide and current measurements, tidal analysis and surface bottom sampling. It is carried out with the latest scientific equipment, most of which is manufactured by the parent company. While the teams are selling a professional, scientific service, and are neither salesmen nor guinea-pigs, their activities are incidentally publicizing Kelvin and Hughes equipment, and often result in over-

Continued on page 117



MEN OF VISION

He Was Invited to Canada

THE advertisement director of a well-known automotive magazine looked up from the advertising copy submitted by a new account and called his assistant. "Check-up on this outfit," he said, handing over the copy. "Don't run this until you are sure these claims can be backed up."

The "outfit" was J. W. Lawrence Ltd., of Great Britain and Canada, and the "ad." did get in. The anecdote serves to show the initial scepticism which their unique radiator manufacturing equipment produced among those familiar with conventional radiator manufacturing methods.

Servicing all types of aircraft radiators during the war made Jack Lawrence acutely aware of the need for quicker and more adequate radiator testing and reconditioning. His natural mechanical turn of mind suggested two courses. By filling a radiator with a fluorescent compound and applying internal pressure to its structure, it is possible to detect leaks otherwise undetectable, and also speed up testing. By reducing all defective radiators to their component parts by an oven process, it became possible to re-manufacture them efficiently on a unit plan, and thus use a large proportion of unskilled labour.

Unorthodox Ideas

Highly unorthodox though they were, his ideas found acceptance at a time when improvisation and expediency were allowed to challenge the conventional approach. Now his processes are common enough, and have even been surpassed. But at first, he says, they "really frightened people."

Mr. Lawrence was well aware of the enormous difficulties found by small firms wishing to manufacture radiators, especially those of the tubular type. From his knowledge of the problems involved and from his own unconventional ideas he produced visionary plans.

At the end of the war, with his small savings, he rented a chapel in Leicester, aptly called "Crusader Hall," and started manufacturing on his own account. For some time he was literally on his own. "Looking back,

it was a very bad time to do it," he says. "At the end of the war every kind of contract was slashed and acres of Government-subsidised capacity remained idle."

Within four months he began to get small contracts for making oil coolers and radiators for aircraft companies in Britain and overseas, and he engaged his first few employees. By 1948 this small force had grown to over fifty, and a local factory was taken over.

A few months later, in February 1949, an airline company invited him over to Canada to advise them on radiator maintenance problems. "The day I went," he says, "was the best day's work I ever did—for as a result

we established a beach-head and became self-supporting."

Having enough money coming in and a small labour force functioning he began to investigate the field of automotive radiation. He found tremendous scope there for manufacturing this kind of product, but the conventional means for manufacturing itrequiring large machines and equipment-were beyond his purse. In any case, it was obvious that no single plant could adequately service such a vast country. The only way was to have a number of small units. So he set about producing his own equipment for manufacturing radiators, and has now developed small and efficient production units which are located wherever a reasonable demand exists.

Four years have gone by since Mr. Lawrence's first visit to Canada. His present labour force over there is 150, as large as the British counterpart. Turnover in Canada last year topped a million dollars, some of which came

Mr. Lawrence spent an initial six



J. W. LAWRENCE: His problem—a big country and small capital. Answer—new production techniques

of that trip I found conditions out there most favourable for opening branch works."

The difficulty arose when he returned and tried to obtain a dollar allowance to start. "After several fruitless attempts and a year's delay I finally got £4,000 worth." With this amount and some equipment he returned to Canada, hired a hut on Montreal airport and started all over again.

It was hard going at first. "The electricians installing our wiring took nearly all the dollar allowance," he says, "so we started on aircraft repairs, which involved the least capital outlay and brought in dollars quickest. Thus

months in Canada to develop his offshoot, and he has made 24 more trips over there since—involving at one time an absence from Britain of 22 months out of 36. It is little wonder that his speech has developed a noticeably Canadian drawl.

He believes that the business man who is successful in starting a new enterprise in Britain, where industrial experience is so highly developed, is almost certain to find plenty of scope in Canada. "I doubt if there is a greater country in the world for opportunity," he says. "There are possibilities for all types of businesses. In fact, we have to send dozens of ordinary

manufactured locally. British businessmen who haven't done so should go through the Canadian Customs book to see how many products are not being made in Canada."

Back in Britain, however, the development of J. W. Lawrence Ltd. of Leicester could hardly be described as static. Their new factory is just being completed, and the cost has come entirely from the company's own resources. In fact the firm has never vet borrowed.

The new building is still aptly called "Crusader Works." But Jack Lawrence regards the building project as a chapter already passed. For once a

wants to start something new. Now he is planning to develop the research side of the business, and he also hopes to undertake a world trip later this year to appoint agents for his products and services. With typical optimism, he says: "I want to expose myself to the same atmosphere of opportunity, wherever I find it, as I discovered in Canada."

His immediate problem, however, is to make the company manage without him. "It's surprising," he points out, "but my biggest headache is finding the right men capable of attaining board status. I know from talks with other businessmen that they are experiencing the same problem.

items out from here because they aren't job is done he loses interest in it and £125,000. The then licensee was astounded, but accepted the offer and took £12,500 as a deposit, agreeing to instalments of £10,000 in payment of

> Unfortunately, no sooner had the deposit been paid than the ex-licensee died and the Official Receiver insisted that the entire remaining sum be paid forthwith. For three weeks Arthur Elvin campaigned in the City for a loan. Several of the people associated with Wembley were already impressed with this go-ahead young man, and before long he was able to form a syndicate which lent him the money to buy the stadium.

> No sooner, however, had he claimed ownership than he resold to the present company for £150,000, investing his profit of £25,000 in the new company's shares. Thus at the age of 27, as a substantial shareholder, he was gratified to find himself being asked to accept the managing directorship.

The first post-exhibition event at Wembley was the introduction of grevhound racing. A company was formed and Arthur Elvin invested most of his savings in its 1s, shares. It was a gamble which came off, for an attendance of 60,000 spectators on the first night sent the 1s. shares soaring to 10s. within three days.

After greyhound racing, speedway racing was launched, and with disastrous results. Only 4,000 spectators turned up on the first night. Arthur Elvin was undaunted. In the north, speedway was already well established. so it was there that he looked for the hest riders

In 1934 the Empire Pool was built at a cost of £180,000, then ice hockey was introduced, followed by indoor athletics, cycle racing, boxing, table tennis and skating championships, indoor lawn tennis and, in recent years, lavish ice shows. To-day Wembley is the home of the Football Association Cup Final, international Association Football matches, the Rugby League Cup Final and the annual Women's Hockey International. Arthur Elvin, who was knighted in 1946 and gazetted Deputy Lieutenant for the County of Middlesex in 1948, found full scope for his organizing capabilities in the planning of the 1948 Olympiad.

As a boss, he places great confidence in his immediate subordinates, and he is accessible to every employee. For young people, he has this advice: 'Don't be afraid to keep changing your job until the right one comes along. Then stick to it and work as though nothing else matters."

To Managing Director at 27

O recognize the existence of an opportunity is one thing, to seize it is quite another. Sir Arthur Elvin, chairman and managing director of Wembley Stadium Ltd., who was a £4 10s. 0d.-a-week salesman in a tobacco kiosk at the Wembley Exhibition when it opened in 1924, looks back on this job as the turning point of his career.

The story really begins just after the first world war when, as an ex-prisoner of war, he obtained a post in France in charge of labourers of all nationalities who were to dismantle ammunition dumps. This experience was going to prove of paramount importance to him

before very long.

When his job in France came to an end, he was out of work for a while. An ex-officers' association then obtained a position for him in a tobacco kiosk at Wembley. His £4 10s. 0d. a week was something of a come-down after earning £20 a week as a demolition contractor. In fact he had arrived back in London from France with £300 in his pocket, but this sum was spent within a fortnight, for he believed in enjoying himself. Paradoxically, he says that "because I had spent it and had not a penny in my pocket, I was able to buy Wembley Stadium a few years later.

Being a man of vision and of hard selling ability, the exhibition had not been running for long before he graduated from counter-hand to owner of several of the shops in the grounds. About this time he also married the girl in charge of the kiosk next to his original one.

As the exhibition was nearing its end early in 1925 he heard that many of the temporarily erected buildings would



SIR ARTHUR ELVIN "Find the right job, then stick"

have to be demolished, that contractors had quoted two years to do the job, but that the licensees particularly wanted it completed in nine months.

Arthur Elvin's experience of demolition work encouraged him to volunteer to do the job within nine months, and he was given the contract, in spite of prophecies of failure from more experienced men. He answered the challenge by working fourteen hours a day. The job was finished on time and he not only collected a substantial cash payment, but was also able to purchase many of the permanent small exhibition buildings which were offered cheaply. Furthermore, he was allowed to sell any materials which he salvaged from the demolition work, including large quantities of fine empire wood.

Now, with money in his pocket, 27year-old Arthur Elvin, already the owner of many of the little buildings on the site, aspired to ownership of the Stadium itself. He made a bid of



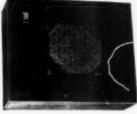
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BRANCHES THROUGHOUT THE COUNTRY

Production Control in a Smaller Firm

By R. G. WARD, F. C. W. A.

The author describes how his firm co-ordinates production.

planning and cost accounting through the iob operator's

fraud-proof, as figures cannot be altered or erased without

This is on duplicating paper, and therefore

A paper read to the Northern Regional Conference of the Institute of Cost and Works Accountants by Mr. R. G. Ward. F.C.W.A., has not, we believe, received the measure of publicity amongst smaller business firms which it merits. Mr. Ward described a simple method of coordinating production, planning and cost accounting in a firm with a turnover of around £500,000 a year and about 200 employees-the size of firm of which he is managing director. William Ward & Son (Sheffield), engineers and small tool manufacturers.

Mr. Ward explained that in a small firm "production meetings take place around the dining table, or in a foreman's office, or in any convenient spot, and decisions made have no recorded minutes." He added that "what, then, is needed here is some simple vet efficient instrument of control," and he went on to explain his own firm's system:

OR this purpose my company uses the operator's job card (see Figure 1, next page). This refers to the manufacture of tools and gauges, but it could be modified to suit a wide range of industries. It is a cheap duplicated form which we print ourselves, but it has the advantage of being fraud-proof, as figures written or typed on duplicating paper or board cannot be altered or erased without leaving obvious signs of the alteration.

- (a) wages
- (b) progress
- (c) costing
- estimating (d)
- (e)
- (f)
- weekly production figures (g)

machine loading and, after use, it is filed and indexed for future reference by the rate-fixers. It is used for all types of work, both

This card provides us with information for:

rate-fixing inspection (scrap and rejects)

reference purposes. The production office is situated in the works, and houses the production or works manager (who is also the planning engineer), the progress staff,

leaving obvious signs of the alteration. The card provides information for wages, progress, costing, estimating, ratefixing, inspection, weekly production figures and machine loading. It remains on file for future reference.

(a) white for male operators

in three colours:

- pink for female operators
- blue for standing time, or idle time through breakdown

production and repairs, and is printed

This latter is of much benefit to the cost clerk, who can readily separate this information from the rest, and if it reaches 20 hours per week for the entire factory, the works manager is given details of the chief items for his personal attention.

Master Card Before filing it away, the rate-fixers complete an operation master card (Figure 2). This is done for each job or standard product, the job cards supplying details of times and prices for the planned operations. Over the past five years all standard tools have been tabulated in this way, and are modified only as new methods or new plant is employed, so that to-day it is largely a matter of checking existing cards and making up new cards for special jobs only. These cards are filed according to product, shape and size, and bear the works order number for

the rate-fixers, and material control. The jig and tool designer has a separate drawing office in another part of the factory, where he combines the duties of tool design with those of plant engineer, as we make most of our own jigs and much of our own machinery.

To explain the uses of the operator's iob card more fully, consider an enguiry received for the supply of metal cutting tools of a special nature. The sales department, situated in the general office, after checking past records to ensure that a similar job has not been done previously, passes the enquiry with samples or drawings to the works office. There the rate-fixers and the works manager (planning) decide upon the method of manufacture and sequence of operations. The ratefixers then make out in duplicate an operation chart, and insert calculated times for each operation. This is usually done by referring to a previous operation master card and job card. but if no data is recorded an estimate based on experience and the capacity of the machine tools is inserted.

If necessary, the jig and tool designer is required to submit a rough sketch of any special jigs or tools which may be required, and the rate-fixers also estimate the time required for their manufacture, and add this to the operation chart, attaching the jig and tool sketch against future demand. If special fixtures are in store and can

NAME				No.	1	
MAT	ORDER	1	ORG	PROCESS	1	
Operation	an .		Description			
	WOR	K TO BE	DONE			
М	C No.		1	PRICE Doz.	_	
M Iss.	C No.	Each	P. W.	T Dog	_	

FIGURE 1: This operator's job card provides an instrument of control for all types of work

easily be adapted, the number of these fixtures is stated on the operation chart, but no charge is recorded for such modification.

The progress manager, who also handles raw material control, then inserts details of material available, and estimates the probable commencing date and delivery date for the job. Should special steel be required, the buyer is notified of requirements and obtains the details of price and delivery prior to the progress manager's completing his forecast of delivery date. As large stocks of tool steel are normally held, this does not often occur.

The enquiry, with the attached operation chart, next goes to the cost accountant, where operation times and materials are valued and overhead rates inserted. As costing is done on a machine hour/direct hour labour basis

this is a simple calculation. Finally, the sales department prepares the official quotation and files the information thus collected.

Should the quotation be accepted and the contract received by sales department, the details of the quotation are added to the official order received and typed (in full) on an internal order form. This form is a set of seven copies, with cut-out carbons, the copies being divided up as follows:

- (a) 1 copy to the customer in acknowledgment of his order
- (b) 1 copy to the agent or representative
- (c) (d) 2 copies for the general office
 —one retained by sales department and one passed to the invoicing clerk (accountant)
- (e) 1 copy to the warehouse with details of marking and dispatch

- (f) 1 copy with samples and drawings to the works office, which constitutes their authority to commence production
- (g) 1 copy for the works manager (planning)

With regard to copy (d), the invoice clerk is part of the accountancy staff and as this copy carries with it the sales department copy of the original operation chart, the cost accountant is thus advised of the details of production and the materials required.

It will be noticed that the duties of planning are carried by the works manager, so that all three departments of planning, costing and production receive full manufacturing details at the outset.

Copy (f) has the reverse side printed and ruled for progress record purposes (Figure 3) and so this copy is filed by the progress department but available for use by any person in the works office.

As all copies bear the same serial number, this number is transferred to the rate-fixer's copy of the operation chart, which chart now becomes the master operation chart for the job. This chart must not be confused with the operation master card (Figure 2) which is the rate-fixer's permanent record of all operations on both standard and special tools. The cost accountant also numbers his copy similarly. A job tally (or series of tallies) is made out bearing the main details of quantity, quality, size, etc., and these, bearing also the same serial number and prefixed with the item number, act as indentification tags during manufacture and never leave the tools till the warehouse is reached. A copy of this tally is there made out and sent to the invoice clerk who prepares advice notes and labels and passes the slip to the cost accountant to notify him that the job has been completed and dispatched either in part or complete.

Job Progressing

In the meantime, the first operation job card is made out by Progress and passed to the material warehouse. This bears with it the job tally and constitutes either a material issue instruction or a material cutting instruction, depending on whether the steel required is to be issued in its stored form, such as a forged blank or a specially purchased piece, or whether it is to be cut from standard stock bars or sheets.

This job card, when completed, is returned to the rate-fixers, and they

Description	Bize					Code		
W/Q No.	DWG. No.	DWG. No. Customer						_
	OPERATION		M/c.	Qty.	TIO	Ma Ma	By:	d.
1								
2								
3								
4								
5								
4								
7								
10								

FIGURE 2: An operation master card of this type is on file for every job or standard product. Initially, details are taken from the job card

then take responsibility for the issue of all subsequent cards, working from their operation chart. The job cards are sent to the departmental foremen ahead of the work, and machine loading is left to them. As the cards bear the type of machine, and the job times and prices, any alteration on the part of the foreman will require the permission of the rate-fixers. Should any of the times or prices not be acceptable, the operator calls for a rate-fixer to see the job on the machine, and any modifications made are transferred to the operation chart in the works office, and the cost accountant's copy.

After each operation, the job card, signed by the foreman, is returned to the works office, where it is first checked by the wages clerk against the clock cards, then by the rate-fixers against their operation chart, and is passed to the progress department, where details of quantity and date are inserted in the appropriate column on the reverse side of the works office copy of the order form (Figure 3).

Should scrap be noticed, the job is suspended by the progress department till replacements can be put in hand, and when the replacements catch up with the original batch, both are permitted to proceed. If the progress department consider the scrap too high a proportion of the whole, the works manager is given details of the last operation, for his investigation.

The job card next goes to the cost clerk, who extracts details of machine times and material quantities and com-

pares these with his copy of the operation chart. He can then advise the works manager of any excessive cost through oversize material being used, male instead of female labour having done the work, or a serious miscalculation of operational times when the estimate was prepared.

The card then returns to the ratefixers for tabulation of production details, and is filed as described earlier. This goes on operation by operation till the job is cleared, when all manufacturing data is married and filed for future reference.

The cost accountant completes his job cost, and notifies the works manager only if it is not satisfactory from the profit standpoint.

With standard tools and gauges, of which there are several thousand,

many of the operation details are the same, and vary only by size or quality of steel. For these, standard charts have been built up over the years and, by suitable coding, can be referred to on the job cards. The use of such symbols as S/F, S/C, S/S, KR, RG, etc., is quite sufficient for identification of each type of tool.

The foremen, having copies of these standard operation charts, make out their own operators' job cards and pass them to the works office firstly for pricing and again when completed. Production of these "standards" is in the hands of the progress department, who issue them in suitable batches and allocate them to customers' orders or to stocks of finished tools.

The rate-fixers and the cost accountant are thus concerned only with checking operational times, prices and costs, and contact the works manager only when variances occur. It is a form of standard costing.

Should any job require special jigs and tools, as was mentioned earlier. the plant engineer is instructed to prepare the necessary drawings, and, after checking, the works manager gives permission for their manufacture. These drawings will bear the order number as stated on the internal order form, tying them to the iob for which they are required. This enables the cost accountant to identify the job cards he receives for this work, as all jigs and tools are produced on a piecework basis and not at datal time rates. As many of the operations on these tools are similar to production operations, both the rate-fixers and the cost accountant can keep a check on the cost of their production, and it has proved to be a most valuable check.

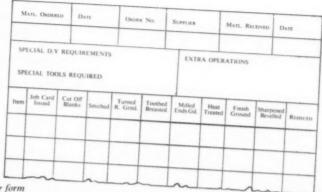


FIGURE 3: Reverse side of the works order form (office copy) is used for progress recording

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CARDIFF

Fanfold Ltd., 7 High Street, Cardiff. SHEFFIELD

Fanfold Ltd., 4-7 East Parade, Sheffield.

MANCHESTER

Fanfold Ltd., Eagle House, 30CrossStreet, Manchester 2.

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Fanfold Ltd., 2 Upper Ely Place, Dublin.

How Flow-Production

Doubled Output,

Cut Costs

By WILFRED ALTMAN

N previous articles in this series, practical methods have been put forward for cutting costs all round. The purpose of this article is to illustrate how one firm, through reorganizing its methods on flow-production lines, has managed to cut its costs to such an extent as to be able to reduce selling prices by as much as 121 per

The firm concerned is the Ferguson Radio Corporation Limited, manufacturers of television sets, and a subsidiary of Thorn Electrical Industries Ltd.

Last August, Fergusons effected a complete change in their methods of production. Up to that time all parts of television receivers were made entirely by individual operatives, as shown in the accompanying photograph. The reorganization involved a change-over to assembly lines based on flow-production. The advantages of this were very soon obvious.

Times Compared

Previously, a complete television receiver came off the assembly lines every 56 seconds, which was considered fairly good. Soon after the introduction of the new methods, one new set was being completed every 29 seconds. This time-saving of nearly 50 per cent was also matched by a substantial reduction in costs.

How was the change-over planned and effected? The company's engineers, of course, began work on the project several months before its introduction last August. This time was chosen to put it into effect because of the annual closing for a fortnight's summer holiday.

During this period-when many of



the engineering staff postponed their holiday in order to be "in on the change-over"-the old assembly lines were completely dismantled. Overhead conveyers were installed, to pass every point of assembly until the packing stage, and from there to the waiting vans, thus avoiding any waste of space and ensuring continuity of movement

Three assembly lines have been installed to cope with the present demand for TV sets. Each line consists of a slow-moving conveyer belt running the complete length of the assembly floor. Each assembly process has been arranged in its logical sequence, so that when a TV receiver reaches the end of the assembly line more than a thousand parts have been installed.

such as transformers and coils, are manufactured in another part of the factory and tested in the sub-assembly shop before passing with other components to the finished parts store. The chassis frames pass through an automatic electro-plating plant which. incidentally, is the first of its kind in the world. From there they travel on a conveyer belt to the main assembly

The fact that several kinds of television receivers are manufactured by Fergusons raises no difficulty from the production point of view. They are all assembled together on continuous production lines. As each chassis is fed into the conveyer system, it is given a disc identifying it with the particular model for which it is intended, so that Certain complete units, however, as it travels along the assembly line it



When Ferguson Radio Corporation introduced flowproduction methods to the manufacture of TV sets. they got three results: output nearly doubled; assembly staff cut by one-third and transferred to other work; retail prices reduced by up to 121 per cent.



BEFORE AND AFTER: General view of the Ferguson television assembly lines before reorganization (above) and after (right). The three slow-moving assembly belts run the full length of the factory

can be selected for attention by the appropriate operatives.

The attention of all operatives is constantly focused on the moving conveyer belt. Nothing is allowed to impede the regular flow of production. Bins and trays from which operatives draw their parts are regularly replenished by a special staff.

Conveyer Safety

As the nearly completed chassis reach the ends of the assembly lines, tubes and valves are fitted, having entered from a separate store by overhead conveyer. In spite of the delicate nature of these components, breakages are practically unknown.

After certain technical adjustments, the completed sets are subjected to a "soak" test, being connected to the electricity main and put under normal working conditions for a period of four hours—to reveal and rectify any faults not previously spotted. There is one more journey—to the picture test bay—where, for the first time, the familiar test card pattern, generated within the factory, appears on the cathode ray tube screens. Further adjustments are made and the timing of each receiver is checked on all five B.B.C. channels.

The chassis are then placed in their cabinets and given a final check on both sound and vision before being packed



securely, with electricity leads and instructions books, into stout fibre-board containers. They then travel straight into waiting vans, and so to the company's accredited dealers.

The new flow-production system has aimed at eliminating all wasteful movements, no matter how small, on the part of the assembly staff. Every operative has a specific job at which he or she speedily becomes proficient. Neither components nor completed sets are ever allowed to lie around. They are continually on the move, and with the overhead transport system, gangways are always kept clear.

Ferguson's impressive results, following their reorganization, merit close study. One complete television receiver off the assembly lines every 29 seconds (compared to the previous figure of 56); assembly staff cut by one-third (and transferred to other work); retail prices reduced by up to 12½ per cent.

How did the staff as a whole take to the reorganization? As mentioned earlier, the engineers and technicians were so keen to see the job through that they readily postponed their holidays. The operatives regarded the idea with enthusiasm from the outset.

When they returned from their holidays they were delighted with the brighter and more modern appearance of the workshops, and were quick to appreciate the greater simplicity of their own jobs.



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This illustration shows the type H|45 High Lift, the latest addition to the BEV range of Fork Trucks.

B.E.V. ELECTRIC TRUCKS

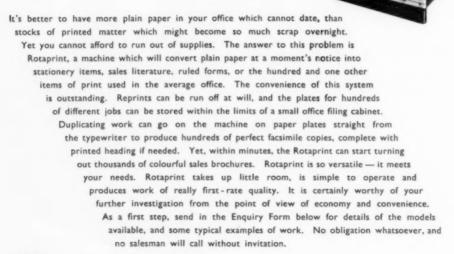


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How Duplicating Aids a QuickSales Policy

By ALAN PETERS



PRODUCTION: Lettering guides and tracing equipment are used extensively in the preparation of sales literature

One important factor in the development of Forest Products of Leeds Ltd. has been an intensive direct mail advertising campaign. This article describes how modern duplicating equipment provides a flexible and economical method of bringing the firm's goods to the attention of potential customers at very short notice.

UPLICATORS, like other familiar items of office equipment, are often taken for granted. Recognizing their more obvious advantages, the user is inclined to treat them casually and to overlook, to a large extent, their real capabilities.

Among the firms which have given careful thought to the use of duplicating equipment are Forest Products of Leeds Ltd., timber merchants and distributors of building materials. Their case is interesting for two reasons. First, because they are more concerned with the quality of the finished work than with quantity; second, because the use of duplicated sales literature has played quite a significant part in the successful development of a young business.

An outline of the firm's history puts this aspect of their business methods into its proper perspective. The man behind Forest Products is 26-year-old L. J. Turner, and it is now four years since he gave up a job with a timber importing company to start what was then a one-man business.

Timber restrictions compelled him to deal exclusively in plywoods and imported hardwoods. Before long, he was supplying substantial quantities of these materials to manufacturers in the furniture, box-making and engineering industries. This field expanded when he managed to obtain a softwoods licence, and also when he decided to introduce heavy building materials as a subsidiary part of the business.

Forest Products became a limited company in 1952. Mr. Turner now has two co-directors and six employees. His turnover, which has been doubling in each financial year, is well into the six-figure class. And while the abolition of timber controls means that competition will become more intense, it also presents new opportunities for expansion.

Making a Name

Behind this success story lies a straightforward policy of keen buying, low overheads and quick selling at competitive prices. Behind it, too, lies a prodigious amount of hard work, for it was by no means an easy task to break into an established trade at a time when materials were scarce. One of the problems which Mr. Turner has had to tackle is how to bring his firm's name and goods to the attention of potential customers in an economical yet compelling form.

While he has made full use of tech-

nical Press advertisements to establish the name and to win the confidence of suppliers and customers, an even more important factor has been an intensive direct mail advertising campaign.

This technique, he finds, has two advantages. In the first place, it brings in a large number of telephone orders—the cheapest method of selling. In the second place, it actively supports the efforts of the firm's sales representatives, who often find that a customer's interest has been aroused before a personal call is made. To encourage customers to retain his sales letters for future reference, Mr. Turner recently distributed a quantity of folders imprinted (by duplicator) with his firm's title.

Apart from the more obvious question of expense, he chose duplicating equipment for this work because he realized that printed sales literature could never keep pace with rapid changes in prices and specifications. Nor could it cover an important aspect of his marketing policy—to buy individual batches of material at "bargain" prices and to avoid storage and handling costs by selling the goods "exquay" as quickly as possible.

Experience has confirmed his belief that duplicated sales literature can have just as much impact on his customers as elaborate printed leaflets. The flexibility of the system allows him to promote "once only" lines among a limited number of prospects almost as cheaply as he handles mail shots for standard materials. And it helps him

to pursue his quick-turnover policy by getting out leaflets, in many cases, on the same day that certain goods become available for sale.

His original machine was a handturned stencil duplicator. Recently, however, he has installed a new electrically-driven machine, capable of producing up to 140 copies a minute. Among the features which ensure that the quality of the work is always of the same standard, even when the operator has to rush it out at short notice, are a synchronized self-inking mechanism, delivering the optimum amount of ink as each sheet passes through the machine, and a feed assembly which gives accurate registration under all operating conditions.

These features make the machine particularly suitable for colour work, and most of the leaflets are now produced in two or more colours. The fact that three colour sets can be accommodated in a drawer in the duplicator cabinet saves storage space.

The ease with which the machine can be set up is also an advantage. Mr. Turner works on the principle that the secret of direct mail advertising is to put only one idea before a customer at a time. It is almost invariably more profitable, he thinks, to send out six separate letters than to incorporate six different ideas in one letter, particularly as it brings the firm's name to the attention of customers on six occasions.

Accessories include lettering guides and an illuminated glass panel for drawing and tracing. Although "frills" are not allowed to obscure the sales message, the aim is always to produce work of a "professional" standard. In this respect, Mr. Turner has taken pains to avoid mistakes which he has observed in the lists and sales letters distributed by some other firms. He holds the view that the whole purpose of a mail shot is defeated if the prospect is irritated by a tight mass of small typescript or by the near-illegibility of important details. It is for this reason that he has had his typewriters fitted with large and small Gothic capitals.

Selective Method

To get the firm's usual letterhead on to the sales literature without the expense of using printed stationery, advantage has been taken of a new photographic stencil-making service. This employs a technique which enables stencils to be produced from typeset material or from line and halftone illustrations.



SINGLE SHOTS: "One idea at a time" is Forest Products' direct mail policy. Here are two examples of recent "shots"

Costs are also reduced by using the duplicator to address the envelopes in which mail shots are sent. A number of addresses from the mailing list are incorporated on one stencil, and the duplicated sheets are then split up for use as labels. The list is divided into general and specialized customers by means of a visible recording system, since it not only increases postal costs—one of the most expensive items in this type of advertising—if customers are bombarded with sales literature in which they are not interested, but also weakens the effect of subsequent letters.

Glazed shelving of the type used in departmental stores provides an ingenious means of sorting duplicating stationery under dust-free conditions, and a specially-constructed cabinet, with shallow drawers, allow stencils to be held for future use. A big advantage of this method of producing sales literature is that it is unnecessary to keep large stocks of leaflets, since

additional copies can be run off quickly as and when they are needed.

The duplicator is also used to produce all office forms, including collection orders, status enquiries, specification sheets, stock sheets and enquiry forms. Where the firm act as agents for certain proprietary lines, their name and address can be imprinted quickly and neatly on the manufacturers' leaflets.

All duplicating work, from the preparation of copy to the actual operation of the machine, is in the hands of one person. This, Mr. Turner believes, is another important point, since it ensures that the style of the sales literature is uniform in all respects. Moreover, the employee in question is one of the outside sales representatives, who undertakes the duplicating work in addition to his normal duties. He thus has a clear idea of the form which sales letters should take—and an excellent opportunity to gauge customers' reactions to them.



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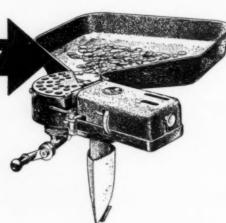
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ELECTRICALLY

More complex operations are possible with this electrical ICC machine which counts, sorts and records up to £1,200 of mixed silver an hour! Deals with denominations of 6d., 1/-, 2/-, 2/6 and is ideal for swift make-up of cash 'floats' and checking. A junior can operate this too. Floor space required: $3 \times 3\frac{1}{2}$ feet. Write for fully descriptive leaflets about these and other ICC time—and work-savers.





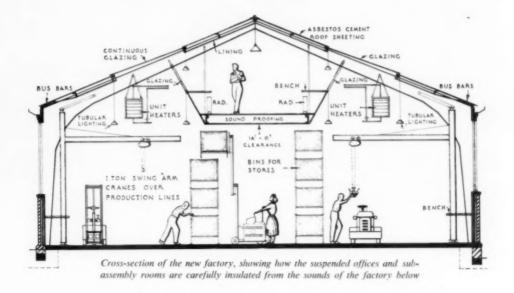
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The Hanging Offices of Basingstoke

Reminiscent of the famous "Hanging Gardens of Babylon", the new Lansing Bagnall factory contains offices and sub-assembly rooms suspended from the reinforced concrete Glover arches of the roof. This makes it possible to use the space under the apex of the roof, which is generally wasted. Careful sound insulation enables executives working in offices immediately above the factory floor to exercise close supervision of the production line below.

ATHER more than a year ago, it became very obvious to Lansing Bagnall Ltd. of Basingstoke, manufacturers of mechanical handling vehicles, that demand for their products had completely outstripped their production capacity. A new factory was needed. The Ministry of Supply were rather enthusiastic about mechanical handling, and when an application was made for a permit to double the size of the Basingstoke plant, it was granted in the surprisingly short time of two weeks.

The first sod was turned on the site of the new factory on April 14 last year, and the employees were in occupation of the completed premises on September 14. One of the main

factors making for speed of erection was the design of the building. This is of Glover construction, using precast reinforced concrete arches held together by steel pins.

There is one pin at the apex of the roof joining each half of the arch, and another pin at the foot of each half,

By G. R. LAMPTON

on either side. Because of the way in which the arches have been designed, the system of construction is quite stable. For example, no matter how much wind pressure is applied to one side of the factory, the "line of pressure" calculated by the designers must pass

through one of the pins, and so there are no undue forces on other parts of the structure.

Although this system of construction can be built with arches up to 120ft. span, giving the same amount of unobstructed floor space underneath, the span chosen at Basingstoke as being most suited to the company's needs was 50ft. The factory is 500ft. long, giving a total ground floor space of 25,000 sq. ft.

To this, however, must be added the floor space of an office which has been built into the ceiling, under the apex of the roof. At present it runs for only half the length of the factory, but it is intended to go the full length. This office in the roof makes use of the





The production line (above) runs down one side of the factory and up the other, both sides being served by a central passageway Picture on left shows how the works engineer can look down from his office on to the two production lines and the central gangway

waste space that generally exists under the apex. Since materials handling manufacturers are continually telling other businessmen to use their "air rights" by stacking their materials upwards, on pallets, it was logical that this new factory should go one step further and use the air space immediately under the roof.

The installation of this office does not, however, require any extra supporting beams, getting in the way of the factory workers below. The 50ft. span is still unobstructed up to a minimum height of 14ft. The office is suspended from the reinforced concrete arches of the factory by means of heavy steel angle sections, bolted at one end to the roof, and at the other to the floor of the office. The roof bolts are pre-cast into the concrete

Floor Loading

This suspended structure can take a live load of 100lb. per sq. ft., making it suitable for offices, for light assembly work or for storage. The width of the suspended room space is 12ft. at floor level, becoming greater above this level, due to the outward slope of one wall. The average headroom is 84ft.

It can be seen from the accompanying diagram that the side walls can both be made to slope outwards, or alternatively, one of them can be made vertical. The latter alternative has been chosen by Lansing Bagnall so that at a later stage they will be able to add an external gangway, closed in up to railing height, to provide means of access from one room to another

doors. As the floor width of the offices is only 12ft., there is hardly room for an internal passage.

Part of the space in the suspended rooms is being used for sub-assembly work-putting together the electrical circuits for the electric trucks manufactured below. At present these assemblies have to be taken up and down the end steps, but it is intended to instal chutes for conveying them direct from the sub-assembly floor to the appropriate part of the main assembly floor below.

Because some of the space under the roof is used for offices, sound-proofing is essential in order to keep out the noises of the factory below. The walls and floors have two skins, and are packed with glass wool. Also those windows which look out into the factory below have double glazing. The result has been found very satisfactory, since draughtsmen who have moved to the new site find that these offices directly above the main factory floor are quieter than where they were previously, next door to the office containing the typing pool.

It is, however, not merely the suspended office which has been well insulated. The whole of the factory has cavity walls and a lined roof. It has an automatically controlled heating system which is oil-fired, with low pressure hot water circulation to unit heaters in the factory and to radiators in the suspended office. Because sedentary workers are comfortable in a higher temperature than factory workers, the office and the factory have to have these separate heating at intervals along the walls, and these

without using intercommunicating arrangements. The heating system is designed to cope with a rise in temperature of 28 degrees above the outside temperature.

The ridge type of natural ventilation which is used provides for four complete changes of air every hour, but there is also provision for cross ventilation through the side windows. In order to conserve heat a system of air locks, or double doors has been provided for both people and vehicles entering or leaving the building. The vehicle entrance has rubber doors so that the company's tractors and fork lift trucks may nose their way in and out without anyone having to operate the doors

Assembly Layout

The assembly line at Basingstoke runs down one side of the factory. across the bottom and up the other side. There is a wide central free passageway down which fork lift trucks may move, delivering bins of assembly parts to the appropriate section of the line. Reserve supplies of parts are stacked upwards in their bins, either side of the central passageway, as shown in the accompanying illustration.

The lighting of the factory consists of fluorescent tubes down each production line with a central line of incandescent lamps. This system provides a minimum of 20ft,-candles at the working plane. Electrical bus bars run along each side of the building, just inside the eaves, so that a supply can readily be run to any point. One-ton capacity cranes are mounted

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can be swung round to the required point of assembly.

The initial stages of assembly are carried out on mobile trolleys, but when the trucks and tractors being manufactured reach a certain stage they proceed on their own wheels. Because of the good minimum clearance of 14ft. in the building, fork lift trucks bringing supplies of parts for assembly are able to carry four boxtype pallets stacked on top of one another.

If the lighting, power, heating and ventilating equipment and the wall and roof insulation costs are included the overall cost of this factory works out at only 25s. per sq. ft. One advantage of the method of construction used, with the office suspended under the roof, is that the works engineer has his office immediately above the centre of the factory floor. He can see what goes on, through his office windows, and he has merely to descend one flight of stairs to be right in the middle of the factory floor. The importance of on-the-spot decisions can be gauged from the fact that Lansing Bagnall are now producing in one week more materials handling vehicles than they produced in the whole of their first post-war year.

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As a step towards the achievement of full co-operation and harmony in industry, N. Corah & Sons Ltd., the Leicester hosiery concern, suggest in their works magazine a set of golden rules for workers to observe, and another set for management.

For Workers:

Do not rub your supervisor up the wrong way.

Do not criticize too easily what is often a very difficult job.

Have trust in the fact that management can often see a little further ahead. Be loyal, not only to fellow workers, but to the firm.

Do not lose your temper or be moody. Refrain from blaming fellow workers for your own mistakes.

Do not try and curry favour.

Like people, who will in turn like you. Be patient.

For Management:

Be fair and friendly and give praise where due.

Reward people in accordance with merit.

Criticize without humiliating, and never in the presence of other people. Give workers a sense of security.

Do not lose your temper or be moody. Do not pass the buck to subordinates. Do not play favourites.

Always give a reason for an order and bring the worker into the picture as far as possible.

Aid to Record-keeping

THE practice of alloting works numbers to employees is increasing. It may be necessary to record this number some ten times or more on insurance, holiday and tax deduction cards, and it is essential that this should be done accurately. A rubber stamp consisting of figures which will give any combination of numbers up to 999999 can be obtained from a stationer and the number required stamped on all relative documents together.

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BUSINESS





How '3-D Defence' Reduces Fire Hazards

By PETER SPOONER

F an industrial fire brigade is to play its full part, it must not be regarded as a self-contained unit which comes into action only when the fire-bells ring, but must spread its influence throughout the organization and co-operate closely with other denartments.

Fire-fighting is, after all, a last resort; the first problem is fire prevention. And unless the defence system is properly organized, the brigade cannot perform efficiently its triple function of safeguarding employees, preventing damage to property and avoiding, as far as possible, any interruption in production

An excellent example of the extent to which a modern defence system can reduce fire hazards even in potentially "dangerous" plants is provided by May and Baker Ltd., Dagenham, Essex, manufacturers of chemical products for industrial, medical and many other purposes. Their methods are based on the principle of "defence in depth."

The first line of defence is the ordinary employee: the man who is on the spot when an outbreak occurs and can -if he has been properly instructed-

either extinguish it himself or at least help to keep it under control until the brigade arrives.

The second line is a corps of 32 parttime members of the works brigade: foremen, chargehands and senior workmen who are employed in the most hazardous areas and are thus immediately available to direct firstaid fire-fighting operations.

The third line, and the heart of the organization, is provided by the chief fire officer and 12 full-time firemen, most of whom have had experience with municipal brigades. Their job is not only to extinguish fires, but also to

train employees and to service all firefighting equipment.

How these three groups are dovetailed into a comprehensive defence system is described below. First, however, one must consider the background against which the system operates.

There is no need to emphasize that a company like May and Baker, processing huge quantities of inflammable materials, have serious fire protection problems. This is reflected in the layout of their 60-acre site, to which they moved in 1934, just one century after the company's inception. The plant is composed entirely of single-storey buildings segregated by broad roadways. In other words, protection began at the design stage, and the same policy is pursued by bringing in the chief fire officer when plans are drawn up for new buildings.

The whole point of segregation is defeated, of course, if combustible materials are stored haphazardly in the open. At May and Baker's factory, great care is taken to see that gaps between the buildings are kept free from fire-links.

In buildings where large quantities of inflammable liquids are handled,

Most industrial fires start in a small way. If the man on the job is properly instructed and has the right equipment, serious outbreaks are generally avoided-especially when these first-aid measures are backed by the resources of a modern industrial brigade. On this principle of "defence in depth" is based the fire-fighting organization of May and Baker Ltd., Dagenham, Essex. Their methods, developed to reduce the grave fire risks associated with the manufacture of chemical products, offer valuable lessons to firms in other industries.

FIRST DEFENCE LINE: All employees receive instruction in the use of first-aid fire-fighting appliances

saucer floors and/or Bund walls retain spillage and provide a means of concentrating foam if fire breaks out. The drainage system is designed to prevent such liquids from flowing into areas where ignition might take place.

Some processes involve the acceptance of high fire risks. Here, however, full use is made of up-to-date fire protection equipment and materials. One hazardous process, for example, is protected by an automatic CO2 installation which seals the building, cuts off all power, steam and water, extinguishes the fire and calls the brigade! An important feature of this installation is that a number of CO2 cylinders are held in reserve in case of flashback and to allow production to be resumed while the expended cylinders are being re-charged.

Strict control is exercised over the use of flame- and spark-producing tools in the factory. This is done by means of a permit system, each permit being signed by a fire officer as well as by a chemist and engineer, and covering only the day on which it is issued.

But however much is done to make



safe the plant and processes, it is im- damage occurs. For this reason the possible to rule out the human element. and the safety of a factory depends on the people who work there. If these people are made fully aware of the hazards, and are trained to act quickly in an emergency, the danger of a serious conflagration is much reduced.

Most industrial fires start on a small scale. Tackled promptly-and with the right equipment-they can often be extinguished before appreciable training of employees represents one of the most important aspects of May and Baker's fire defence organization.

The procedure is straightforward. and is planned to achieve its purpose with the minimum loss of production time. Fire protection is treated, too, as an integral part of the general safety training programme. The chief fire officer is an active member of the works' accident prevention committee;

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and while neither the safety officer nor the training officer encroach on his territory-or he on theirs-all work in close co-operation.

Instruction takes three forms:

One session of the training programme for apprentices and new employees is devoted to a lecture and demonstration by the chief fire officer. Fire hazards are also touched upon by the training and safety officers, and the subject is thus put in its true perspective against the overall operation of the plant.

2 All male workers are histration in the lecture and demonstration in the All male workers are instructed by use of first-aid fire-fighting appliances on the type of outbreaks which they are liable to encounter. These periods of instruction-given to one department at a time-are repeated quarterly. Employees in areas protected by automatic installations receive specialized instruction

Female workers-mainly engaged 3 Female workers—mainly on packing and similar duties—are also lectured at quarterly intervals. In their case, however, instruction is limited to orderly and rapid evacuation. assembly points and the roll-call system.

Fire protection features, too, in the general safety exhibitions staged in the



SERVICING: Full-time fire officers are responsible for the condition of all fire-fighting equipment

factory from time to time: and, of course, in civil defence exercises,

Part-time members of the fire brigade are drawn, as already mentioned, from the ranks of senior employees. A fairly large proportion of them are engineers. One reason for this is that engineers are not restricted to any one part of the factory, and their overall knowledge of the plant is particularly valuable in an emergency. It is also

a great advantage if a fire occurs outside normal working hours, to have an engineer on hand to attend to the plant afterwards and thus enable production to be resumed as quickly as possible

All part-time firemen are paid a retaining fee. In return for this they undertake one hour's training a week (individual instruction at night, and collective training during the daytime) and are available for fire-fighting duties at all times while they are at work in the factory.

Also included in the part-time force is a proportion of shiftworkers. This means that adequate "cover" is provided over the full period of 24 hours. During the night, the main fire station is manned by two full-time fire officers and four part-timers, the latter receiving an additional allowance for such duties.

The brigade is equipped with the latest types of heavy fire-fighting appliances. In the main station, situated within a short distance of the administrative buildings, are housed the fire engine, the ambulance and three large pumps. The fire engine, built to the chief fire officer's specification, has a

Continued on page 114

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the importance of the welfare side from

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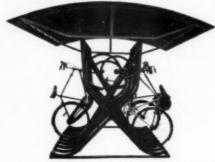
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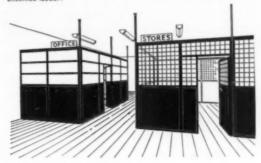
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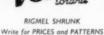
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Policy Column

A Question of Status —

WHO should hold administrative responsibility for the canteen? Where thousands of meals are served daily, the caterer is a departmental head in his own right. He answers to the general manager, and deals on equal terms with the accountant, the personnel manager and the service departments.

Where a hundred or so meals are served daily, the position is equally clear-cut. Even in day-to-day details, the cook/manageress or chef/supervisor is responsible to the welfare officer, personnel department or works manager.

It is in the medium-sized organization that confusion often exists. The following example shows the sort of situation which may arise.

For some years, a canteen serving 600 or 700 dinners daily has been run very smoothly and efficiently by a fully-qualified manageress. Prices are low, portions big, menus above-average. So, with rising food prices and wage rates, the canteen's subsidy has increased.

Now it has been decreed that the subsidy must be at least stabilized. A new personnel manager has begun to look into the canteen's affairs, to discuss price increases and to suggest economies.

Up to that point, the manageress is anxious to co-operate. But she takes a rather different view when day-to-day matters are dissected, her staff given instructions, her suppliers interviewed, and her judgment in menu-planning overborne. With some justification, she feels that her status has been destroyed.

The most common arrangement, in organizations of this size, seems to be to put the canteen under the "umbrella" of the personnel department. This arrangement works well as a rule—once it is established. But it is reasonable to expect that a manager or manageress who has been directly responsible to the board in the past will settle down more successfully if the canteen is given "departmental" status.

A few canteens are under the authority of a management committee. Here again, the arrangement is generally successful once it is established. If it is a new measure, however, safeguards must be devised to preserve the authority and status of the manager.

How to Fix Salaries for Canteen Supervisors

By WINIFRED McCULLOUGH

Senior Canteen Adviser, Industrial Welfare Society

It is now recognized that the canteen supervisor does a specialist's job. From this arises two questions: (1) How much is the job worth? (2) How can the services of a good supervisor be retained for as long as possible? This article provides a yardstick for fixing salaries, and also indicates some of the reasons why supervisors seek to change their jobs.

HILE variations exist in different areas and industries, it is generally true to say that the salaries paid to canteen managers, head cooks and supervisors are well above the minimum rates laid down by the Catering Wages Board.

For manageresses, the minimum seems to be £300 a year—but this applies only to starting salaries or to small canteens serving 150 or fewer dinners daily. Where the number of meals is between 250 and 500, a more usual level is £400 or £500. Above this number (but below 1,000) a good average is £100 a year for every 100 dinners served.

Men get about £100 a year more than women in comparable positions.

It is difficult, I find, to fix an average where the number of dinners exceed 1,000. Salaries vary so much that a manager may gain or lose £250 a year merely by changing the address of his employment.

From the employer's point of view, a first-rate manager is worth a good salary. For an extra £200 a year, a medium-sized canteen can command a man or woman who will build up trade, cut down costs, and keep the standard of food, service and hygiene above reproach at all times.

Where it is impossible to offer a really "competitive" salary, a young manageress is often a very good choice. In adaptability and enthusiasm, she is

likely to make up for what she lacks in confidence and experience.

At the other end of the scale is the woman of late middle age who has held bigger jobs in the past but now feels she would like to undertake work with less responsibility attached to it. In many cases, she will settle down very happily in a smaller job at a smaller wage. And, of course, her experience will prove to be a particularly valuable

When a firm have obtained the services of a good manager or manageress at the salary which they are prepared to pay, another problem arises. How can they hold on to this person's services for as long as possible?

In an attempt to provide a solution, I give below an analysis of a few of the cases on a small appointments panel. By summarizing the reasons why some canteen managers and manageresses seek to change their jobs, it may be possible to indicate means of avoiding the difficulties which follow such changes in other organizations. At the same time, the analysis may help firms which are contemplating changes themselves, to attract—and keep—the right people.

1—Male. Age 50. Ten years in present job. His firm refuse to raise prices, so he finds it impossible to make ends meet. Feels insecure.

2-Male. Age 30. Five years in present job. Firm have far fewer

workers than formerly, and he fears that his salary is too high for the present size of the job. Feels insecure for that reason.

- 3—Male. Age 27. Three years in present job. Canteen serves 400 main meals a day. Earns £350, wants at least £500.
- 4—Female. Age 35. Eight years in present job. No salary increase for two years. Earns £400 for a 600 mainmeal job, wants another £100. Feels hadly treated.
- 5—Female. Age 53. Eighteen years in present job. Canteen to be taken over by contractors.
- 6—Female. Age 47. Twelve years in present job. Manages a small canteen administered by welfare officer. New welfare officer "doesn't seem to like her," so feels insecure.
- 7—Female. Age 40. Eight years in present job. Not particularly well-educated, but a hard worker with good references for all her working life. Manages a small canteen. Firm are trying to reduce canteen losses, so "accountant keeps calling for figures." She feels that she is being investigated, does not really understand the situation or appreciate the necessity for more economy. Feels insecure.

What does this analysis show? The fact emerges that at least five of these people might not have sought new jobs at all if they had had a frank talk with someone in authority about their particular problem. In the case of number one—the man whose firm would not raise prices—the managemen may be quite content to provide a generous subsidy, but have not made this fact clear. As a result, they are losing a good man.

Perhaps the woman who is leaving after eight years' good service because she has not had a rise for two years would have stayed if the reason—bad trade or the limits of the salary structure—had been explained to her

frankly.

An interesting point is that in both the cases where people are seeking new jobs because they feel that they are inadequately paid, their present salaries are below the levels which I referred to at the beginning of this article.

Anyone who comes into contact with an employment panel of this nature appreciates that a certain number of restless people move from job to job with rather monotonous regularity. On top of this is the very proper movement of young managers and manageresses to more responsible positions as they gain experience. But a disturbing feature is the large percentage of quite unnecessary changes which cause considerable trouble (and

Talking Points

Don't Waste Her Skill

N a small factory canteen, it is obviously essential that the staff should be flexible. But it is possible for flexibility to be taken so far that no one has either skill or speed in any particular iob.

The most vivid example is the cook. How often does she have to turn her hand during the afternoon to cleaning, taking a trolley round or even counting

the cash?

A cook is (or should be) a specialist earning extra money for her extra skill. Where there is not enough cooking to occupy the full day, why not employ a part-time cook?

The cook is, in fact, a producer. She should spend every moment of her working time turning raw materials

into saleable food.

Factory "Snack" Bars

S there in operation a complete selfservice "snack" canteen on the lines of the new station cafeterias? If so does it work?

On the face of it, the savings in time for the customer, and in labour for the canteen, would be great advantages. But a debatable point is whether the canteen customers would feel too much at home to pass smoothly and quietly along the counters, accepting the fact that what is not on show is not on sale, and refraining from indignant comments when ham rolls are "off" at 1.15 and "on" again at 1.25.

if such difficulties could be overcome, this "choose for yourself and pay at the end" type of service could be combined with a fairly short menu and as few price variations as possible. It might make a quick and economical

factory snack bar.

often loss of money) to both employees and employers.

Many such changes could be avoided. I estimate that in five out of ten cases the main reason for a move is fear of something which is not going to happen—fear that could be dispelled by an occasional open discussion.

There is an obvious connection between rates of pay, continuity of service and the question of status, which is discussed in general terms in "Policy Column" this month. I think it should be pointed out, however, that status does not involve only major issues; many apparently trivial matters also influence a supervisor's attitude towards the job.

A good example concerns working

dress. The canteen manageress who has to wear a white overall may feel that she loses authority by being just like the members of her staff. The canteen manager who has to wear a warehouse coat may feel rather out-of-place in a factory where other men of a similar status are not called on to do so.

Their objections are valid. But even more valid is the necessity for all people who come into contact with canteens to look on the managers and manageresses as specialists.

For a manageress, I think that a coat overall, either white or of a pastel shade, should be obligatory.

A coloured sash, the word "supervisor" embroidered on the overall pocket, or a headband is often used as a badge of office for canteen supervisors, so that customers and staff may recognize the person in charge.

Where the Money Goes

THE following break-down of expenditure in a canteen kitchen over a period of four weeks offers executives a useful opportunity to compare their own canteen costs with those in another organization.

These figures come from a canteen which serves about 3,500 breakfasts. 7,500 lunches, 3,700 teas and 1,400

light meals a week.

Its aim is to make 40 per cent above the cost of the food. Prices charged are: Main meal 1s.; pudding 4d.; high tea 9d.; tea 2d. cakes 2d. and 2dd.; sandwiches (half) 3d., 4d. and 5d.

The establishment is an extremely efficient one. It serves good food and sells home-made cakes.

	1st week	2nd week	3rd week	4th week
F	49	35	41	50
Eggs		-		
Cereals	32	23	15	25
Meat	94	100	112	115
Cheese	8	7	13	13
Tin goods	49	50	43	44
Bacon	21	21	22	16
Fish	19	20	19	23
Fresh and dried fruit	3	4	4	9
Potatoes and veg.	56	59	63	67
Bread and cakes	71	58	47	59
Fats	27	30	20	25
Tea and coffee	13	16	15	14
Sugar	20	14	10	22
Milk	71	80	76	72
Jam	5	5	3	4

General

stores

16

13

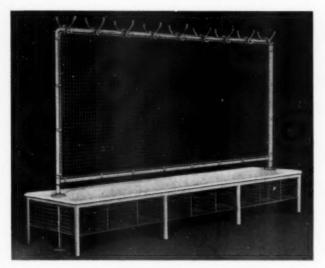


Fig. No. 2616: Also available single-sided for wall positions or base unit alone can be supplied together with hat and coat hooks for wall fixing. For complete range, please ask for List No. BU 879

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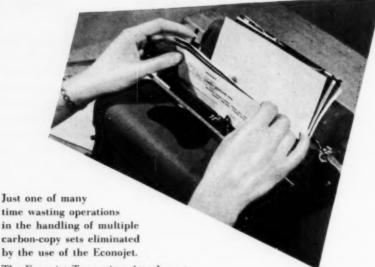
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Ouiet Register

A MONG the features of the new motorized keys which considerably speed up operation. Goods bought can be itemized, the prices being recorded individually. The amounts are shown visually and are printed on the audit strip and the customer's bill. Totals and sub-totals can be obtained by pressing the appropriate keys. Other motorized keys are for single item purchases and for sales classifications of special lines. The audit roll mechanism is fitted with a ratiocontrol which automatically governs the amount of paper fed for each operation. Considerable savings in paper result.

Visual indication of every item recorded is given at both the back and the front of the register and the indi-

Motorized keys speed operation

cator has been arranged to give maximum visibility from all angles. The printed sales bill shows complete details of every transaction (including each item if there is more than one).

An ink reservoir insures that the ribbon is always correctly inked and that records are perfectly legible.

A multi-function lock protects all records and provides control over the operation of the machine. The interior of the cash drawer can be removed as a unit providing for quick changing over of cashiers.

Pleasantly designed and finished, the register is very quiet in operation by

virtue of the design of the gears and the materials used for them.

Colour tinting of the amount keys helps fast and accurate operation and the very light touch allows constant operation for long periods without fatigue. Any amount up to £9 19s. 113d. can be recorded in one registration. The total accumulating capacity of the register is £9,999 19s. 113d.

Multi-total versions of the Silent 51 are also being manufactured for use where sales dissection is required.

Enquiry Ref. No. 0.4/1.

Complete Suite

ELEVEN separate units go to make up the new Wyndsor executive suite which is available in various shades of oak, mahogany or walnut. The pieces are a desk, telephone side-table, re-volving and tilting armchair, an additional armchair and two smaller chairs. a filing cabinet, bookcase and cupboard, writing table, letter tray, and waste paper basket. The desk has a deep filing drawer fitted with a cradle to take any standard suspension filing system and a movable accessories tray in the centre drawer. The top is inlaid with skiver leather as are the tops



Some of the 11 Wyndsor pieces

of the telephone and writing tables. The latter has an extension flap at the rear for use by a secretary

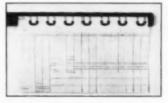
The filing cabinet has four drawers, three of which are fitted to take suspension files. In the bottom drawer is a revolving decanter holder and sprung grips for glasses.
Glass-fronted doors are fitted to the

bookcase whilst the cupboard unit has wooden sliding ones. If required these two units can be supplied as a combined bookcase-cupboard.

Enquiry Ref. No. 0.4/2.

Simpler Analysing

WORKING on the same principle as a pegboard, a new clip strip for analysing sales, etc., has the advantage that perforated stationery is not necessary. Neither is the width of the columns being analysed governed by the spacing of the pegs. The spring-Neither is the width of the



Perforated stationery is not needed

loaded clips are fitted to strips of ebonite or are ranged along the top of

In operation all the clips are raised, the overlapping forms are placed in position a few at a time and the clips lowered one by one. The strips and boards can be supplied in any size and a board is also being produced which has a left-hand, T-square line guide. This board also has slots in tl.. top into which the strips can be inserted.

The metal clips are covered with rubber to prevent damage to documents.

Enquiry Ref. No. O.4/3.

Modern Fastener

HE Windsor 325 stapler combines a number of refinements with an attractive appearance and finish. It is cushioned on a full length rubber foot which makes it quiet in use and prevents any possibility of desk tops being scratched. A moulded rubber handrest adds to the comfort of the operator.

Loading and clearing are claimed to be very simple and the base swings back to allow tacking. Staples can be clamped inwards or outwards depending on which side of the reversible anvil is used. Weight of the Windsor



Kind to desks and operators' hands

325 is 19 ounces, the throat depth is 5in, and the overall size is 8in, by 3in, by 2in.

The standard model has a stove enamelled finish but a de luxe chromefinished version is also available.

Enquiry Ref. No. O.4/4.

Two-handed Adder

THE Adwel adding-listing machine is claimed to be really portable, fast, quiet and easily operated. A full eight-column keyboard is fitted and the keys are moulded in plastic and are octagonal in shape. Total, subtotal, repeat and correction keys are provided. If a single key is pressed incorrectly, however, the operation of the right key in the same column will automatically correct the error. Ci-

phers are printed on the tally roll automatically so it is only necessary to operate one key to record a figure like

Operation is speeded up by the fact



Several keys pressed together

that keys in several columns can be pressed simultaneously. Two-handed operation is thus possible.

Enquiry Ref. No. 0.4/5.

Speeds Marking

SEFUL in offices and businesses like laundries and dry cleaners is a new ball point pen designed for making indelible marks on fabrics, leather, paper labels, etc. The pen makes black markings which will not run or

smudge and will remain impervious to repeated washings or long exposure to the weather. The new pen should considerably speed up all kinds of marking jobs for it writes as smoothly on fabrics, etc., as an ordinary ball point pen does on paper. Refill units are available and can be fitted very simply and quickly.

Enquiry Ref. No. 0.4/6.

Connects and Records

ATEST model of the Emidicta dictating machine has some interesting new features. The recording time available with it has been doubled and is now 12 minutes. It also incorporates a device which allows two-way intercommunication between executives and their secretaries who occurs separate offices. A special desk unit incorporates a microphone for dictation, call and speech keys and a call indicating lamp. The secretary is also provided with one of these desk units connected to her transcribing machine.

In common with other Emidicta models the new one records on plastic or paper magnetic discs which can be erased very simply and used again. Discs can if necessary be sent through the post for transcription at the receiving end. Back-space, play-back



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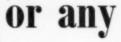
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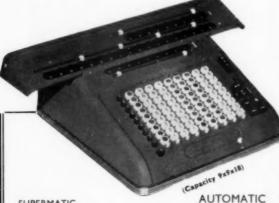
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and erase controls are supplied and recordings can be made of both sides of telephone conversations.

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Enquiry Ref. No. 0.4/7.

Shapely Sharpener

ISEFUL in general and drawing offices is the Castell automatic pencil sharpener. This neatly designed device can be screwed to any flat surface or it can be secured to a table or desk top with a clamp which can be fitted to any of the four sides. Springloaded levers adjust the holding device to any size of pencil inserted. A simple

adjustment controls the amount of Dirt Beaters taper.

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mechanism for cleaning is a very simple operation.

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Enquiry Ref. No. O.4/8.

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Enquiry Ref. No. 0.4/9.

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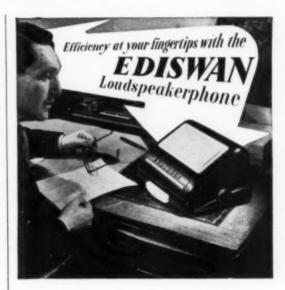
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Enquiry Ref. No. O.4/10.

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EXECUTIVES who like contemporary-style furniture will be interested in a new desk with a curved

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Enquiry Ref. No. O.4/12.

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WATCHMAN'S CLOCKS

Can you be sure that your night patrolman carries out his duties efficiently? A Gents' "Tell Tale" Watchman's Clock shows at a glance — All patrol points visited — Exact time of visit — Points not visited, in fact a complete tamper-proof record of a night patrol.

See us on STAND C.407 B. I. F. Birmingham N.B. A Gents' Controlled Electric Clock System allows for any number of clocks, time recorders, programme instruments and other timing devices to be controlled by one Master clock entirely independent of mains variations and breakdowns.

Fully illustrated catalogues of any of the above products are free on request.

GENTS

ELECTRICAL EQUIPMENT

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INDUSTRIAL EQUIPMENT

MATERIALS HANDLING

Lifting Height Doubled

HIGH lift with low headroom are combined in the latest addition to the Lo-Hed range of electric hoists. In the new design, the bottom block has two falls of rope instead of four. giving nearly twice the lift height for the same load at the same speed. The



Two falls of rope

present range caters for loads up to 3

Another new development is a rope guide which ensures that the rope winds evenly on the drum despite any carelessness on the operator's part.

The hoist is operated by a pushbutton station. A limit switch. governed by the revolutions of the drum, provides an automatic cut-out at the top and bottom limits of the lift height. There are two brakes: a mechanical brake in the gear-box for controlling the lowering speed, and an electromagnetic brake on the motor to prevent any tendency for the load to drift. The gear-box is totally enclosed, and forms an oil-bath for the train of spur gears.

The hoist can be supplied with plain trolley wheels for push travel, or with geared drive for power travel. Enquiry Ref. No. F.4/1.

LIGHTING

Flameproof Lighting

HIGH safety factor is provided A by the construction of a new 5ft. flameproof fluorescent lighting fitting. An internal explosion prevents the maximum internal pressure from ex-ceeding about half the allowed safety figure, and the fitting can be used for any situation covered by Groups 1 and 11 of the Flameproof Regulations.

Re-lamping can be done with one hand from one end. If the fittings are installed in a continuous row, end to end, pairs of adjacent fittings can be maintained from one ladder position.

All auxiliary gear is fitted in the end castings and wired complete. It is recommended that instant start gear is used for 220/250 volt supply, switchstart fitting being provided to cater only for 200/210 volt cases.

Enquiry Ref. No. F.4/2.

INSTRUMENTS

Stoppages Analysed

THE outstanding feature of the new indicator model TM Servis recorder is that it not only records the times at which machine stoppages occur but also uses a simple code to indicate the cause of each stoppage.

This code is applied by a punch mechanism which enables the machine operator to perforate a circular chart. at the exact time of a stoppage, with from one to six small holes. holes are made by a row of needles, graduated in length, the length of the stroke (and thus the number of holes made) being determined automatically by turning the indicator to the appropriate code number.

To the work study engineer, this system offers very definite advantages. since it provides him with a complete record of the causes of stoppages to every machine throughout the working day, without necessitating his constant presence in the building.

Non-electrical and self-contained, the recorder can be fitted to almost any

Code shows causes

type of machine, vehicular or static. Lorry drivers, for example, can record the causes of hold-ups as these occur. since the code can be used to cover most contingencies from loading delays to mechanical breakdowns.

The makers suggest that its use enables maintenance and works engineering staff to be brought into production bonus schemes, by allowing accurate calculations to be made of the proportion of lost time which is due to preventable mechanical failure or faulty maintenance routine.

Indicators are available in 4-hour, 8-hour, 24-hour and 72-hour types, with or without clock face.

Enquiry Ref. No. F.4/3.

Lightweight Counter

WEIGHING only 11 oz., including chain and finger-ring, a new hand tally counter counts up to 9,999 and resets to zero. The case and operating



Counts up to 9,999

lever are made of white plastic and the counter is small enough to be carried in the waistcoat pocket.

It is also available mounted in banks for differential counting. Enquiry Ref. No. F.4/4.

FINISHING

Heavy-duty Spray Gun

INTENDED for big jobs in industry, the new B.E.N. Model W.H. spray gun has a one-piece duraluminum body and handle, and weighs only 24lb, with syphon cup. It has a highlypolished finish with plated fittings.

The spreader cap is a hot brass forging, while the material nozzle is of stainless steel, precision-machined to ensure absolute interchangeability of parts. Stainless steel is used, too, for both the self-centring material needle and the variable spray control needle. The trigger is a brass forging and has a hardened steel insert pad to prevent wear by the valve spindle.

By adjusting the spray control needle,



For big jobs

the operator can vary the width of the spray or change from round to fanshape without stopping spraying. Enquiry Ref. No. F.4/5.

PROCESSING

Cuts Welding Costs

PROVIDING all downhand welding positions with a minimum amount of effort, the Bode model 10HH/A welding positioner is designed to elim-

inate time-wasting loading and balancing methods. Any piece of work up to 10 cwt. in weight (and with its centre of gravity not more than 6in. from the top plate) can be clamped to the plate within a matter of seconds.

Easily rotated by hand, and locked by means of a powerful foot-brake. the top plate is at the end of a shaft inclined at an angle of 22½ deg, to the main shaft. The design ensures that any load within the capacity mentioned above is automatically held near the



Rotated by hand

point of balance, which means that very little effort is needed to tilt the work from one welding position to another.

Jigs or workholders can be secured

directly to the machine, giving easy access to all parts of the work. Fabrications can be built up, stage by stage. on the top plate.

A larger model—the 20HH/A—is also available. Similar in design, this has a maximum capacity of one ton, with the centre of gravity of the workpiece 9in. from the top plate.

Enquiry Ref. No. F.4/6.

GENERAL

New Storage Bin

OR storing and holding parts for bench assembly, the Kabi SB.100 storage bin, available in black, cream, red and green as well as the standard phenolic material, is a useful accessory.



Stacking is easy





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38 EMPIRE WORKS

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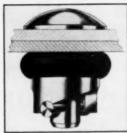
The design facilitates stacking and also allows the bins to be clearly labelled.

Overall dimensions are: length 7# in., width 5#in. and depth 3#in. Enquiry Ref. No. F.4/7.

Vibration-free Fasteners

OUICK, efficient method of attaching removable panels to a main structure is provided by Vibrex fasteners. These are assembled in the panel as complete units, and are locked or unlocked simply by turning the slotted

Depending on rubber expansion for their action, the fasteners are both firm and flexible. They absorb vibra-



One turn locks it

Watchmen are important people

Every well-run country in the world mploys policemen. Every efficient

Every well-run country in the world employs policemen. Every efficient army knows that alert sentries are a vital precaution. Government Departments regard it as essential to employ Watchmen equipped with Watchmen's Clocks to guard their property. Nearly all large industrial concerns and vast numbers of small businesses equip their Watchmen with Watchmen's Clocks — because they know from experience that it pays to do so.

to do so.

It is not enough, however, to hire a
watchman and then leave him to his
own devices. In large numbers of
cases premises are entered despite the
fact that a watchman was on duty.

tion and-when used with cushion washers—eliminate metallic contact between panel and base.

Assembly is simple. The stud is passed through a $\frac{1}{32}$ in, hole in the panel, and the rubber sleeve, cam and retaining pin are attached in that order. The fastener is locked in a in. plain hole in the base.

Suitable for securing metal, glass and plastic panels, Vibrex fasteners are made in a number of sizes, to hold together plates of various thicknesses. Enquiry Ref. No. F.4/8.

ELECTRICAL SUPPLY

Giant Cell

BELIEVED to be the largest standard sealed-in stationary cell now available, the Chloride GCG10E has a capacity of 450 Ah, at the 10-hour rate of discharge, down to a final voltage of 1.85.

These cells, intended for emergency lighting and power, switch-closing and similar duties in industry, are suitable for operation on all types of circuit, 'floating," trickle or straight charge and discharge.

Since they are designed for mounting on single-tier stands with their plate edges adjacent to each other, intercell connections are short, reducing the voltage drop under heavy discharge conditions

Flat sheets of Porvic (a new microporous plastic material) form a con-



No internal "shorts

tinuous diaphragm between the plates. to eliminate internal short-circuits.

The recommended normal charging rate is 62 amps, reducing to 31 amps towards the end. Each cell weighs 224lb., complete with 4 gallons of acid. Enquiry Ref. No. F.4/9.

Continued on page 118

WATCHMEN ARE IMPORTANT PEOPLE

In this connection
The BLICK WATCHMEN'S CONTROL SYSTEM serves three very

important purposes:
If he is left entirely alone the night watchman's job is a very discouraging If he is left entirely alone the night watchman s job is a very discouraging one. He just wanders simlessly around or sits by the stove and, maybe, goes to sleep. Nobody takes any interest in him and nobody knows whether he is doing his job conscientiously or not. But if you give him a Blick Watchman's Clock you show him that you are interested in him. You show him that you want to know what he is doing. You make it possible for him to take an interest and pride in his

work.

It enables you to find out whether you have a good man you can trust : one who will do his job provided he knows someone is checking on him or one who is indolent and no good to you.

But the Blick System goes further than that. There are instructions issued with it that enable you to brief your watchman in such a way that it is extremely unlikely burglars will ever attempt to break into your premises. And the records the System gives you enable you to check at a glance that your instructions have been correctly carried out.

In return for three minutes work a day your supervisor will have complete control of the situation and you will make your premises virtually immune from burglary and far safer from fire.

That is why the Blick System is used by so many of the largest organisations in the country and also by thousands of smaller firms employing a single watchman only

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to do so.



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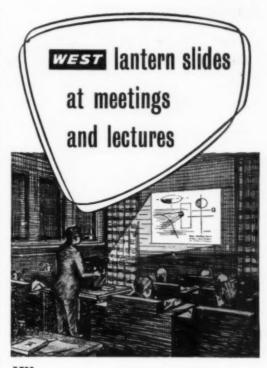


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APRIL, 1954



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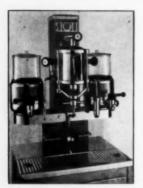
make things clear

A. WEST & PARTNERS LTD. (established 1888) 4 ABBEY ORCHARD ST., WESTMINSTER, LONDON, S.W.I

CANTEEN FOUIPMENT

Under-counter Boiler

ATTRACTIVELY-STYLED in metallic bronze, glossy black and chromium, the Connoisseur pressure café set is fitted with an under-counter It has an output of 275 pints boiler of boiling water an hour, and can infuse 48 pints of black coffee an hour. Infusion takes place under



275 pints an hour

pressure at a carefully-controlled temperature, and the design ensures that the water is free from steam.

Coffee and milk are stored in Pyrex urns which are easily unscrewed for cleaning. Full counter space is available under the urns-the set occupies a counter area of only 10in. by 6in.

Compact Fryer

THERMOSTATIC control ensures that frying is carried out at the right temperature in a new compact fryer, thus economizing in frying compound and electricity

The fryer is a single pan unit, suitable for both AC and DC current. Maximum loading is 9 kW.

A cover, folding down when the fryer is not in use, carries brackets which support the frying baskets above the pan so that all surplus fat drains back. Internal size of the pan is 20in. by 16in. by 8in. deep, and each basket measures 14½in. by 9½in. by 6in.

The switch panel is housed in a cupboard space below the fryer, which also provides access to the draw-off tap.

The fryer is finished in mottled-grey vitreous enamel with chromium-plated angle supports. The pan and top surround are polished mild steel.

Enquiry Ref. No. C.4/2.

WELFARE EQUIPMENT

New Fire Bucket

HANDLE attached to the base of A the new Red Label fire bucket eliminates any possibility of the bucket of only 10in. by 6in. being stood on the floor. In previous Enquiry Ref. No. C.4/1. models, this was achieved by fitting a



For hanging only

deep round base, but the new method of construction serves the same purpose much more cheaply

Dimensions of the bucket are: top diameter 10½in., depth 11in., and bottom diameter 7½in.

Enquiry Ref. No. W.4/1.



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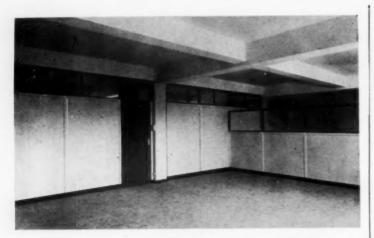
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3-D FIRE DEFENCE

Continued from page 92

pumping capacity of 500 gallons of water and 1,000 gallons of foam a minute. Its first-aid tanks hold 100 gallons of water and 60 gallons of foam compound, the latter being sufficient for six minutes' operation. It carries two types of self-contained breathing apparatus and the usual ancilliary equipment.

In the rear portion of the main station are the firemen's quarters and a maintenance workshop,

The sub-station is in the centre of the most hazardous area of the plant. This houses a hose-cart, a large pump and various first-aid fire-fighting appliances.

Full-time fire officers are responsible for servicing all fire-fighting equipment, including hose, hydrants, extinguishers and respirators. Since more than 2,000 small extinguishers are distributed throughout the works, this item alone represents a formidable task. Each extinguisher is numbered, and is inspected once a month; its full case-history is recorded in a cardindex, and also in an inspection book. Particular attention is paid to the CO₂ types.

Servicing extinguishers includes repainting them at fairly frequent intervals. In this connection a colour code is used: foam extinguishers are cream, CO₂ extinguishers black and all others red. The idea is to avoid confusion and dangerous mistakes when the extinguishers are used by employees in an emergency, a vital point in a chemical plant, since the use of water on certain chemical compounds could have serious consequences.

Strict Inspection

To avoid deterioration, all hose is kept in the two stations and subjected to strict inspections. Reserve lengths are stored in the workshop on racks which permit air to circulate freely around them. Altogether, the brigade has 3.500 feet of hose.

Among the full-time fire officers' other duties are ambulance work—all are fully qualified in this respect—and the issue and maintenance of the various types of respirator which form part of the general safety equipment used in the factory.

Thirty fire alarm call-points are situated in strategic positions throughout the works. The system is electricallyoperated on an open circuit (with battery reserve) and the source of a call is registered on indicator boards in both stations. As is the practice with public fire alarm systems, the employee who initiates a call is instructed to stay at that point until the brigade arrives.

When the main station receives a call, fire bells are rung only in the areas where part-time firemen are working. The bells are not intended as a general evacuation signal, and the reason for restricting them is to avoid confusion and interference with work in other departments unless there is a danger that the fire will spread rapidly.

If a fire breaks out during the normal working period, half the professional brigade goes to it at once, while the other half remains on reserve at the main station. Part-timers are also divided into two 24-hour watches, one on duty and the other on reserve. If an alarm sounds, all part-timers report immediately to the sub-station. The first four (irrespective of which watch they are on) take out the hosecart; other "on duty" members follow them to the scene of the fire, but the remainder of the reserve watch stay at the station until they are needed.

"Outside" Liaison

By operating on these principles—and with the entire labour force as the first line of the defence—May and Baker's brigade is in a position to deal effectively with all "normal" incidents which are likely to occur. Liaison is maintained, of course, with the local fire service, members of which have visited the factory and been introduced to the specific hazards which this type of production involves. But their assistance would only be called upon if the size and nature of an outbreak threatened to exceed the resources of the works' brigade.

Ample evidence of the brigade's efficiency is supplied by its large collection of trophies. For the past four years it has represented London in the finals of the inter-branch competition organized by the Industrial Fire Protection Association of Great Britain. Competition drill, in which both full- and part-timers participate, is a valuable means of enlivening what is, to a large extent, routine work.

In routine, however, lies the brigade's real value. Last year, for example, it attended more than 70 "incidents" in the factory. Owing to the nature of the work, all were potentially dangerous outbreaks, yet none developed to that stage or caused appreciable loss of production.

APRIL, 1954





Yes, I can hear you perfectly.

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FINANCING A BUSINESS

Continued from page 52

industrial experience. On the basis of this information they are able to give a decision, generally within 24 or 48 hours, approving or disapproving of the local bank manager's opinion.

If there is any doubt, or if the application is for a large amount, it must come before a committee. This committee, however, sits daily, and the delay in this case is still no more than about 48 or 72 hours. Thus a centralized system, which would appear to the outsider to involve bureaucracy, works with surprising speed.

On the other hand, some of the banks have a decentralized system of local boards of directors. These local boards sometimes, but not always, have their origins rooted in the bank's history. One of the big banks, for example, is really an amalgamation of 20 banks, dating from 1896. When the original 20 banks came together. they did so more in the manner of a federation than of a centralized body. The local boards of directors were retained and they give approval to loans of considerable size, sometimes running into the lower tens of thousands of pounds, only referring larger applications to head office-of course the figures relating to all transactions do come to head office after the event, and there could be a post mortem on any mistake.

Over the years more branches of the bank have been opened in areas not previously served, and more local boards have been set up, so that there are now 30 of them. Some of these contain members of the original banking families, while some of the newer ones contain former officials of the bank who have the part-time assistance of local prominent businessmen.

These local boards, knowing their own areas intimately, pass judgment on the applications submitted to them by branch managers. They meet at least a few times a week, so that business can be handled speedily, but in any case a full-time director is almost always present to deal immediately with any urgent application. Some of the big banks lie between the two extremes of administrative system, having a few local committees and also some degree of centralization. Which is the better system, it is not possible to judge. One can merely record the fact that the two systems exist and applicants for overdrafts do not appear to find the one working any more or less efficiently than the other.

WORLD-WIDE SERVICE

Continued from page 64

seas sales. Surveys have been carried out to contract in many parts of the world, including North Africa, West Africa, Portuguese East Africa, Syria, Lebanon, Iran, Kuwait, Bahrein, Canada and the United States. This service is believed to be unique.

Sometimes a survey is made in the course of selling equipment. It may happen that a large port authority decides to give up the traditional lead and line in favour of the modern system of echo-sounding. It purchases the necessary equipment from Kelvin and Hughes, who send out a team to carry out a demonstration survey in order that the customer's survey staff may become thoroughly conversant with the new technique. For example, a team was recently dispatched to Bombay, where they did an initial survey of the harbour and at the same time trained the Indian staff in echosounding practice.

The methods adopted by the other two subsidiary companies—those concerned with aviation and industrial instruments—are based on the same principle of service with sales. There is, of course, close co-operation between the three divisions. For example, the representative who visited Mexico and Japan on behalf of Kelvin and Hughes (Marine) Ltd., was able to devote some time to an investigation of the market for the products of Kelvin and Hughes (Industrial) Ltd. Two or all three divisions may be represented by the same service depot.

The group's emphasis on service, coupled with the importance attached by top executives to personal contact with even the remotest of customers, involves the group in expenditure amounting to many thousands of pounds a year. This expenditure might be appreciably reduced if the directors and management took a less exacting view of their responsibilities towards export customers.

What benefits have resulted from this policy of sales with service at almost any cost? Sales to overseas customers have more than doubled since the war, but until recently there has been a seller's market and goods were snapped up as fast as they could be produced. Now the position has changed and it is necessary to go out and sell. When international competition becomes still more acute, the group expect to reap the full benefit from their world-wide coverage and high reputation for quality and service.

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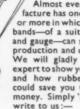
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Continued from page 110

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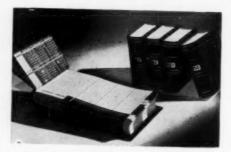




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Business

T O Jones, Percy (Twinlock) ... 103 SAFES CLASSIFIED GUIDE BUSINESS AND INDUSTRI EQUIPMENT & SERVICE

ACCOUNT BOOKS Copeland-Chatterson Co. 27 Jones, Percy (Twinlock) 103
ACCOUNTING MACHINES
Burroughs Adding Mch5, 36 Mercedes Sterling Book- keeping and Calculating Machines Ltd 86
National Cash Register 44 Remington-Rand Ltd. Cover iii Underwood Business Mchs. 42
ACCOUNTING SYSTEMS
Art Metal Construction 29 Carter-Davis Ltd — Copeland-Chatterson Co. 27
Kalamazoo Ltd 21 Lamson Paragon Supply Co. 79 Powers-Samas Ltd 19
Shannon Ltd 87
ADDING MACHINES Block & Anderson Ltd 30
Bulmer's (Calculators) Ltd. 25 Burroughs Adding Mohs. 5 36
Bulmer's (Calculators) Ltd. 25 Burroughs Adding Mchs5, 36 National Cash Register 44 Office Machinery Ltd 120 Sumlock Ltd 85
Taylor's Typewriter Co. 123
Underwood Business Mchs. 42 Van Der Velde (Office Equipment) Ltd 22
ADDRESSING MACHINES
Addressograph Multigraph 11 Fanfold Ltd 72 Roneo Ltd 31
ADDRESSING MACHINE ATTACHMENT
Lamson Paragon Supply Co. 79 Smith, W. H. & Son Ltd —
ADVERTISING GIFTS Conrad Press Ltd 124 Hochfeld, Richard (London) 124
BLINDS Avery, J. & Co 93 Danaura Ltd 123
PUBLICATIONS Financial Times 32
Financial Times 32 The Times Review of In-
dustry 3
BROADCAST MUSIC Dictograph Telephones 26 Telephone Rentals Ltd 67
BUSINESS ACCESSORIES Ambidex Equipment Co. 128 Coombs, H. A., Ltd 118
CALCULATING MACHINES
Archimedes-Diehl-Machine Co. Ltd 101
Block & Anderson Ltd 30 British Olivetti Ltd 2
British Olivetti Ltd 2 Bulmer's (Calculators) 25 Burroughs Adding Mch 5, 36 London Office Machines 97
Mercedes Sterling Book- keeping and Calculating Machines Co. Ltd 86
00

Sumlock Ltd 85 T.S. (Office Equipment) 84	DUPLICATING MACHINES
Taylor's Typewriter Co 123	Block & Anderson Ltd 30 Bulmer's (Calculators) 25
Farquharson, James, & Sons 94	Ellams Duplicator Co 100 Gestetner Ltd 17
Medcalfe & Co. Ltd 94	Roneo Ltd 31
CARS Car Mart Ltd 119	
CASH REGISTERS National Cash Registers 44	Dictograph Telephones 26 Gent & Co. Ltd
Regna Cash Register 118	I.B.M. United Kingdom 83
CASTINGS Renfrew Foundries Cover ii	Magneta Time Co 35 Synchronome Co. Ltd 113 Telephone Rentals Ltd 67
CINE EQUIPMENT Distributors of G.BBell	EXHIBITIONS British Industries Fair 6
& Howell Cine Equip- ment Prospect xii	Brussels International Fair 121 Hanover Trade Fair 35
CLOAKROOM	FACTORY EQUIPMENT
EQUIPMENT Abix (Metal Industries) 93	AND ACCESSORIES Constructors Ltd 24
Bawn, W. B., & Co. Ltd 124 Harvey, G. A., & Co 97	Sieber, James, Equipment Co. Ltd 90
Sieber, James, Equipment	FILING SYSTEMS Art Metal Construction 29
Westwood, Joseph & Co. 122	Art Metal Construction 29 Copeland-Chatterson Co. 27 Expandex Visible Filing 122
CLOCKS, WATCHMEN'S Blick Time Recorders . 9, 110	Jones, Percy, Ltd 103
Gent & Co. Ltd 106 Synchronome Co. Ltd 113	Remington-Rand Ltd. Cover iii Roneo Ltd 31
COIN COUNTING	Shannon Ltd 87 FIRE PREVENTION
MACHINES International Coin Count-	Nu-Swift Ltd 125 Read & Campbell Ltd 116
ing Machine Co. Ltd 80	FLOORING
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY	FLOORING Gt. Met. Flooring Co 116
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd Columbia Ribbon Mfg. Co	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd Columbia Ribbon Mfg. Co Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 72	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES CHARGE GERAND & CO. 91
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mfg. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Colleys Co. 79 Petty & Sons Ltd 98	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Freeder Brothers 91
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Horton Mig. Co. Ltd 88 Lambart & Smyth Ltd. 91
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mfg. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 78 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — COUNTING AND	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Freeder Brothers 91 Horton Mig. Co. Ltd 88 Lambart & Smyth Ltd. 91 Peter's Automatic Mchs 88 Saniguard Apoliances 92
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mig. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 78 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — COUNTING AND NUMBERING MACHINES	FLOORING Gt. Met. Flooring Co
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mfg. Co. — Copland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 78 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — COUNTING AND NUMBERING MACHINES English Numbering Mch 109	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Freeder Brothers 91 Horton Mig. Co. Ltd 88 Lambart & Smyth Ltd 91 Peter's Automatic Mch 88 Saniguard Appliances 92 Vernon & Co. Ltd 88 INDUSTRIAL CLEANING B. V.C. Eng. Co 113 Johnson, S. C., & Son Ltd. 16
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mfg. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 78 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — COUNTING AND NUMBERING MACHINES English Numbering Mch 109 CYCLE PARKS Abix Ltd 93	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxton, Gerrard & Co 91 Freeder Brothers 91 Horton Mfg. Co. Ltd 88 Lambart & Smyth Ltd. 91 Peter's Automatic Mchs 88 Aniguard Appliances 92 Vernon & Co. Ltd 88 INDUSTRIAL CLEANING B. V.C. Eng. Co 113 Johnson, S. C., & Son Ltd. 16 Lamson Engineering Co 103
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mig. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 78 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — COUNTING AND NUMBERING MACHINES English Numbering Mch 109 CYCLE PARKS Abix Ltd 93 Constructors Ltd 93 Constructors Ltd 24	FLOORING Gt. Met. Flooring Co
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mfg. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd 72 Hunt & Colleys Ltd 78 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — COUNTING AND NUMBERING MACHINES English Numbering Mch 109 CYCLE PARKS Abix Ltd 93 Constructors Ltd 93 Constructors Ltd 24 DICTATING AND RECORDING	FLOORING Gt. Met. Flooring Co
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Freeder Brothers 91 Horton Mig. Co. Ltd 88 Lambart & Smyth Ltd. 91 Peter's Automatic Mchs 88 Anniguard Appliances 92 Vernon & Co. Ltd 88 INDUSTRIAL CLEANING B. V.C. Eng. Co 113 Johnson, S. C., & Son Ltd. 16 Lamson Engineering Co 108 New Welbeck Ltd 93 LABELS, TICKETS & TAGS Dapag (1943) Ltd 85 LETTER OPENING MACHINES
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd	FLOORING Gt. Met. Flooring Co
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W. S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Freeder Brothers 91 Horton Mfg. Co. Ltd 88 Lambart & Smyth Ltd 91 Peter's Automatic Mch 88 Saniguard Appliances 92 Vernon & Co 111 Johnson, S. C., & Son Ltd 68 INDUSTRIAL CLEANING B. V. C. Eng. Co 111 Johnson, S. C., & Son Ltd 68 Lambart Briteria Lamber 108 New Welbeke Ltd 93 LABELS, TICKETS & TAGS Dapa (1943) Ltd 85 LETTER OPENING MACHINES International Coin Count-
ing Machine Co. Ltd	FLOORING Gt. Met. Flooring Co
ing Machine Co. Ltd 80 CONDENSERS Telegraph Condenser Co. 14 CONTINUOUS STATIONERY Carter-Davis Ltd — Columbia Ribbon Mfg. Co. — Copeland-Chatterson Co. 27 Egry Ltd 127 Fanfold Ltd 72 Hunt & Colleys Ltd — Lamson Paragon Supply Co. 79 Petty & Sons Ltd 98 Smith, W. H., & Son Ltd. — Wilkes, James, Ltd — Wilkes, James, Ltd — COUNTING AND NUMBERING MACHINES English Numbering Mch 109 CYCLE PARKS Abix Ltd 93 Constructors Ltd 94 DICTATING AND RECORDING EQUIPMENT E.M.I. Sales & Services Ltd. 38 Ediphone Voice Writing 15 Haycraft, M. & L., Ltd. Cover iv London Office Machiners 97 Office Machinery Ltd 120	FLOORING Gt. Met. Flooring Co 116 Perring, John, Ltd 101 GUMMING AND GLUING MACHINES Haycraft, M. & L., Ltd. Cover iv FLUORESCENT DISPLAY UNIT C.W.S., Dudley 10 HEALTH SERVICES Cuxson, Gerrard & Co 91 Horton Mfg. Co. Ltd 88 Lambart & Smyth Ltd. 91 Peter's Automatic Michia. 88 Saniguard Appliances 92 Vernon & Co. Ltd 88 INDUSTRIAL CLEANING B.V.C. Eng. Co 113 Johnson, S. C., & Son Ltd. 16 Lamson Engineering Co 108 New Welbeck Ltd 93 LABELS, TICKETS & TAGS Dapag (1943) Ltd 85 LETTER OPENING MACHINES Ronson Products Ltd 87

AL	Kalamazoo Ltd 21 Lamson Paragon Supply Co. 79 Moores' Modern Methods 102 Ruddock, J. W., Ltd 48	Remington-Rand Ltd. Cover ii SEATING Abix Ltd 9:
ES	Shannon Ltd 87 MARKING EQUIPMENT Cushman & Denison Ltd 122	Hostess Tubular Equipment Ltd 9 Leabank Office Equipment 12 Office Machinery Ltd 12 Tan-Sad Chair Co 3
30 25 100 17 120 31 76	MECHANICAL HANDLING Lamson Engineering Co 108 Victrolec Ltd	STEEL STORAGE EQUIPMENT Bawn, W. B., & Co. Ltd 12 Brown, F. C 12 Constructors Ltd 2 Copeland-Chatterson Co. 2
26 106 83 35 113 67	NOISE PREVENTION Burgeas Products Ltd 116 Cullum, H. W., & Co. Ltd. 40 Merchant Trading Co. Ltd. 8 OFFICE FURNITURE (STEEL)	Glover, J., & Sons Ltd 11 Harvey, G. A., & Co 9 Metal Shelving (Industrial) 11 Roneo Ltd 3 Rubery Owen Ltd 1 Westwood, Jos., & Co. Ltd. 12
6 121 35 NT 24	Art Metal Construction 29 Cave, C. W., & Co. Let 23 Harvey, G. A., & Co. Ltd 97 Jenkins, Fidgeon Ltd Lot 121 Metal Shelving (Industrial) 117 Office Machinery Ltd 120 Perring, John, Ltd 101 Roneo Ltd 31 Rubery Owen & Co. Ltd 18 Tan-Sad Chair Co 31	TABULATING MACHINES Cave, C. W., & Co. Ltd 2 Powers-Samas Ltd 1 TAILORS Hacker, James, & Sons 12 TELEPHONE AMPLIFIER: AND ACCESSORIES Edion Swan Electric Co 10 Fosnadek (Barason) Ltd 11
. 29 . 27 . 122 . 103 er iii . 31 . 87	OFFICE FURNITURE (WOOD) Caplan, H. (Furniture) Ltd. 102 Cave, C. W., & Co. Ltd 23 Epstein, S. Ltd 83 Office Machinery Ltd. 120 Perring, John, Ltd 101 Shannon Ltd 87	Televox Ltd 10 TELEPHONES AND SOUND EQUIPMENT Dictograph Telephones 2 Gent & Co. Ltd 10 Magneta Time Co. Ltd 3 Reliance Telephone Co Synchronome Co. Ltd 11 Telephone Rentals Ltd 6
. 125	OVERALLS Wheeler, H., & Co. Ltd 94 PACKING Gosheron, John, & Co 112	TICKET ISSUING MACHINES Automaticket Ltd 6
. 101	PAINTS British Paints Ltd 13 PARTITIONING	TICKET PRINTING MACHINES Dapag (1943) Ltd 8 IBM United Kingdom 8
. 10 . 91 . 91 . 88 . 91 . 88	Abix Ltd 93 Anderson Construction Co. 114 Art Metal Construction 29 Roneo Ltd 31 PENS AND PENCILS Eagle Pencil Co 119 PENSION CONSULTANTS The Noble Lowndes Pen-	TIME RECORDERS Solid Frame Solid Frame
92 . 88 ING . 113 . 16 . 108 . 93 AGS . 85	sion Service Prospect iv PHOTOGRAPHIC REPRODUCING EQUIPMENT Edison Swan Electric Co	TYPEWRITERS AND ACCESSORIES British Olivetti Ltd
. 80	PNEUMATIC TUBE SYSTEMS Lamson Engineering Co 120 PRINTING MACHINES	VISIBLE RECORDS Art Metal Construction 2 Bulmer's (Calculators) 2 Cave, C. W., & Co. Ltd 2 Copeland-Chatterson Co. 2
. 87 RS	Rotaprint Ltd 76 RIBBONS & CARBONS Richardson, W. J., & Sons 105	Kalamazoo Ltd 2 Moores' Modern Methods 10 Remington-Rand Ltd. Cover ii Roneo Ltd 3

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127

Business

ADVERTISERS IN THIS ISSUE

For Classified Guide to Business and Industrial Equipment see page 2

Abix (Metal Industries) Ltd. 93	Fanfold Ltd 72	National Cash Register Co.
Addressograph-Multigraph	Farquharson, Jas., & Sons Ltd. 94	Ltd 4
Ltd 11	Financial Times 32	New Welbeck Ltd 9.
Ambidex Equipment Co 128	Fonadek (Branson) Ltd 111 Freeder Bros. Paper Mills 91	Noble Lowndes Pension Ser-
Anderson Construction Co.	Freeder Bros Paper Mills 91	vice, The Prospect in
Ltd 114	riceder bros. raper rims Fr	Nu-Swift Ltd 125
Archimedes-Diehl-Machine	C.B. Carriamana Lad	140-3WIIL ELG 12
Archimedes-Dieni-Machine	G.B. Equipments Ltd.	
Co. Ltd 101 Art Metal Construction Co. 29	Prospect xii	Office Machinery Ltd 120
Art Metal Construction Co. 29	Gascoigne, The, Co. Ltd 115	Ozalid Co. Ltd 20
Automaticket Ltd 68	Gent & Co. Ltd 106	
very, J., & Co 93	Gestetner Ltd. 17	Perring, John, Ltd 101
	Gestetner, Ltd 17 Gledhill-Brook Time Recor-	Peter's Automatic Machines
lawn, W. B., & Co. Ltd 124	diedilli-prook Time Recor-	reter's Automatic Plachines
Hick Time Recorders Ltd. 9, 110	ders Ltd 109 Glover, J., & Sons Ltd 111	Ltd 86 Petty & Sons Ltd 96
Block & Anderson Ltd 30	Glover, J., & Sons Ltd III	Petty & Sons Ltd 98
	Gosheron, John, & Co. Ltd. 112	Powers-Samas Accountancy
British Electrical Develop-	Great Metropolitan Flooring	Machines Ltd If
ment Assn 4	Co. Ltd 116	
British Industries Fair 6	Greyer, M. E 125	Read & Campbell Ltd 116
British Olivetti Ltd 2	Greyer, 11. c 123	Read at Campbell Ltd 116
British Paints Ltd 13		Regna Cash Register Co 118
British Vacuum Cleaner &	Hacker, James, & Sons 123	Reliance Telephone Co. Ltd.
Fritish Vacuum Cleaner &	Hannover Trade Fair 35	Remington-Rand Ltd.
Eng. Co. Ltd 113	Harvey, G. A. (London) Ltd. 97	Cover ii
Eng. Co. Ltd 113 Frown, F. C 124	Harvey, G. A. (Collegel) Cto. 37	Renfrew Foundries Ltd.
Sulmer's (Calculators) Ltd. 25	Haycraft, M. & L., Ltd. Cover iv	Coveri
brussels International Fair 121	Hochfeld, Richard (London)	
lurgess Products Co. Ltd 116	Ltd 124	Richardson, W. J., & Sons
Surroughs Adding Machines	Holdings Fidelity Films 125	Ltd 105
Lad Facilities	Holmes, Godfrey (Plastics)	Roneo Ltd 31
Ltd 5, 36 Byron Business Machines 34	Ltd 120	Ronson Products Ltd 87
lyron Business Machines 34	Horton Mfg. Co. Ltd 88	Rotaprint Ltd 76
Paladada Candan (Biban)		Rubery Owen & Co. Ltd 18
Calculating Services (B'ham)	Hostess Tubular Equipment	Ruddock, J. W., & Sons 118
Ltd 125	Ltd 94	Ruddock, J. VV., & Sons 110
Caplan, H. (Furniture) Ltd. 102		Ruthurstat Ltd II
ar Mart Ltd 119	IBM United Kingdom Ltd. 83	
ave, C. W., & Co. Ltd 23		Saniguard Appliances Ltd 97
onrad Press Ltd 124		Seldex Dept. of Constructors
Onrad Press Ltd 124 Onstructors Ltd 24 Oombs, H. A., Ltd 118	International Coin Counting	Ltd 12
Coomba M A Lad 119	Machine Co. Ltd 80	Shaw Publishing Co. Ltd 126
00mbs, H. A., Ltd 116		Shaw Publishing Co. Ltd. 126
Co-operative Wholesale So-	Jenkins Fidgeon Ltd 105	Ciahan Isman Essiament
ciety, Ltd 10 Copeland-Chatterson Co.	Johnson, S. C., & Son Ltd 16	Sieber, James, Equipment
opeland-Chatterson Co.	Jones, Percy (Twinlock) Ltd. 103	Ltd 90
Ltd. 27	Jones, Fercy (Twintock) Etc. 103	Synchronome Co. Ltd II
ullum, H. W., & Co. Ltd 40	W. I	Synchronome Co. Ltd 11:
ushman & Denison Ltd 122	Kalamazoo Ltd 21	
Cuxson Gerrard & Co. Ltd. 91	Kodak Ltd 104	T.S. (Office Equipment) Ltd. 10:
Luxson Gerrard & Co. Ltd. 71		Tan-Sad Chair Co. (1931) Ltd. 33
Danaura Ltd 123	Lambart & Smyth Ltd 91	Taylor's Typewriter Co. Ltd. 12
Daniel Ltd 123	Lamson Engineering Co. Ltd. 108	
Dapag (1943) Ltd 85	Lamson Paragon Supply Co.	Telegraph Condensers Ltd 14
Dictograph Telephones Ltd. 26	Lamson Faragon Supply Co.	Telephone Rentals Ltd 67
Dunlop Rubber Co. Ltd.	Ltd 179	Televox (London) Ltd 109
Prospect viii	Ltd 79 Leabank Office Equipment	Times Review of Industry
Durham, H. H., Ltd 125	Ltd 121	
	Lomas, S., & Co. Ltd 125	Underwood Business Ma-
E.M.I. Ltd 38	London Office Machines Ltd. 97	
1. C		chines Ltd 42
agle Pencil Co 119 dison, Thos. A., Ltd 15		
dison, Thos. A., Ltd 15	Magneta Time Co, Ltd 35	Van Der Velde Office Equip-
dison-Swan Electric Co. Ltd. 103	Medcalfe & Co. (1950) Ltd 94	ment Ltd 22
gry Ltd 127 Ilams Duplicator Co. Ltd 100	Mercedes Sterling Book-keep-	Vernon & Co. Ltd 81
flams Duplicator Co. Ltd 100	ing & Calculating Machines	Victrolec Ltd 34
nglish Electric Co. Ltd 7		
	Ltd 86	W A 0 0
inglish Numbering Machines	Merchant Trading Co. Ltd 8	West, A., & Partners II
Ltd 109	Metal Shelving (Industrial)	Westwood, Joseph, & Co.
pstein, S., Ltd 83	Ltd 117	Ltd 12
xpandex Visible Filing Co.	Ltd 117 Moore's Modern Methods	Ltd 12 Wheeler, H., & Co. Ltd 9 Wingrove & Rogers Ltd 7
Ltd 122	Ltd 102	Wingrove & Rogers Ltd 7
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